

Montana Department of
ENVIRONMENTAL QUALITY

WATER PROTECTION BUREAU

Agency Use

Permit No.:

MTG010214

Date Rec'd

1/3/12

Rec'd By

bs

FORM
NMP

Nutrient Management Plan

READ THIS BEFORE COMPLETING FORM: Before completing this form (Form NMP), Concentrated Animal Feeding Operation (CAFO) operators need to read the General Permit, particularly Part IV.A. CAFO operators also need to read the "Instructions For Filling Out Form NMP," found at the back of the Form. Form NMP is intended to help CAFO operators develop a site-specific Nutrient Management Plan, in compliance with Part IV.A of the General Permit and all applicable State rules and statutes. Your Nutrient Management Plan must be maintained at the site as required in Part III of the General Permit. Sections B and C on your Form NMP must state the information exactly the same way as it was stated on the most recently submitted version of your Form 2B. Attach additional pages as necessary, indicating the corresponding section number on this NMP form. For additional help in filling out this form please read the attached instructions. The 2008 General Permit, current fee schedule, and related forms are available from the Water Protection Bureau at (406) 444-3080 or <http://www.deq.mt.gov/wqinfo/MPDES/CAFO.asp>

Section A - NMP Status (Check one):

- ☐ New No prior NMP submitted for this site.
☒ Modification Change or update to existing NMP.

Permit Number: MTG010214 (Specify the permit number that was previously assigned to your facility.)

Section B - Facility or Site Information:

Site Name Square Butte Land & Cattle Company Feedlots
Site Location N 1/2 SE 1/4, Section 24, T 18 N, R 13 E, M.P.M.
Nearest City or Town Denton County Fergus

Section C - Applicant (Owner/Operator) Information:

Owner or Operator Name Square Butte Land & Cattle Company, LLC
Mailing Address 4801 East Broadway Blvd., Suite 501
City, State, and Zip Code Tuscon, AZ 85711
Phone Number (703) 999-7569 ; ranch manager's #

RECEIVED

JAN 03 2012

DEQWPB
PERMITTING & COMPLIANCE DIV.

Section D - NMP Minimum Elements:

1. Livestock Statistics

Animal Type and number of animals	# of Days on Site (per year)	Annual Manure Production (tons, cu. yds. or gal)
1. Beef Calves : 99	175 (2009-2010)	619.8 tons
2. Beef Calves : 155	179 (2010-2011)	992.6 tons
3.		
4.		
5.		
6.		
7.		
8.		

Method used for estimating annual manure production:

DEQ Circular #9

Ave. Weight $[675 \times .106 \times (\# \text{ of days} / 2000)] \times \# \text{ of cattle}$

2. Manure Handling

Describe manure handling at the facility:

Manure is piled into mounds. It is then let sit for at least 120 days. It is then removed and applied.

Frequency of Manure Removal from confinement areas:

Currently it is done on an annual basis because there have not been many animals. If there are ever more animals at the facility, that could increase to twice a year.

Is this manure temporarily stored in any location other than the confinement area? ☐ Yes ☒ No

If so then how and where?

Is manure stored on impervious surface? ☐ Yes ☐ No N/A

If yes, describe type and characteristics of this surface:

3. Waste Control Structures

Waste Control Structure (name/type)	Length (ft)	Width (ft)	Depth (ft)	Volume (cubic ft or gallons)
1. Control Dikes				
2. Ditch				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

4. Disposal of Dead Animals

Describe how dead animals are disposed of at this facility:

Dead animals are removed from the site within 24 hours whereby they are properly disposed of.

5. Clean Water Diversion Practices

Describe how clean water is diverted from production area:

A grassy swale a small ditch are located next to the road that runs on the south side, up-hill side, of the facility.

3. Waste Control Structures

Waste Control Structure (name/type)	Length (ft)	Width (ft)	Depth (ft)	Volume (cubic ft or gallons)
1. Control Dikes:				
2. - West	680'	6'	2.5'	95,383 gal.
3. - Center	660'	6'	2.5'	92,577 gal.
4. - East	400'	6'	2.5'	56,108 gal.
5.				
6. Natural Pit	80'	60'	3'	53,863 gal.
7.				
8.				
9.				
10.				
11.				
12.				

4. Disposal of Dead Animals

Describe how dead animals are disposed of at this facility:

5. Clean Water Diversion Practices

Describe how clean water is diverted from production area:

6. Prohibiting Animals and Wastes in Contact with State Waters

Describe how animals and wastes are prohibited from direct contact with state waters:

Animals are restricted and confined by fences.

7. Chemicals and Contaminants

Describe how chemicals and other contaminants are handled on-site:

Ivermectin Pour-On (pesticide) is applied to cattle under a covered working facility. Empty containers are removed from the site and disposed of by burning. Medicated feeds are stored in hopper bottom bins & delivered to feed bunks daily.

8. Best Management Practice (BMPS)

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's **production area**. Indicate the location of these measures. Include a schedule for implementation of each of these measures. Examples of BMP measures could include but are not limited to: constructing ditches, terraces, and waterways above an open lot to divert clean water run on; installing gutters, downspouts and buried conduits to divert roof drainage; providing more roofed area; decreasing open lot surface area; repairing or adjusting water systems to minimize water wastage; using practical amounts of water for cooling purposes; recycling water if practical and applicable.

Three dikes are constructed on the down-hill side which collect runoff during times of very excessive moisture. That then runs into an old ditch which continues running east. Very rarely will water actually reach this ditch. Water is on a float system & is checked daily to prevent freezing or waste. There are also large grass buffers that separate fields where manure is applied or runoff from state waters. Cattle are mainly kept during the winter which reduces dust & odor. There is also less runoff during the winter months.

6. Prohibiting Animals and Wastes from Contact with State Waters

Describe how animals and wastes are prohibited from direct contact with state waters:

7. Chemicals and Contaminants

Describe how chemicals and other contaminants are handled on-site:

8. Best Management Practice (BMPS)

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's **production area**. Indicate the location of these measures. Include a schedule for implementation of each of these measures. Examples of BMP measures could include but are not limited to: constructing ditches, terraces, and waterways above an open lot to divert clean water run on; installing gutters, downspouts and buried conduits to divert roof drainage; providing more roofed area; decreasing open lot surface area; repairing or adjusting water systems to minimize water wastage; using practical amounts of water for cooling purposes; recycling water if practical and applicable.

Three dikes are constructed on the downhill side. Volumes are stated in section (D)(3). There is also a natural pit to collect runoff. In the event water would ever run out of the dike & pit, it would run into a depression. That depression is grass covered and is a large buffer between any water source. All pens in the west end of the facility have grown in with grass and alfalfa due to light usage. Runoff is very limited due to the vegetation. That vegetation will stay in place as the usage claimed in this application is far less than the facility can handle. Cattle can be rotated. Water is on a float system & is checked daily to prevent freezing or waste. There are also grass buffers separating all "manure spread" fields from natural water. Cattle are kept during winter which reduces dust & odor. There is also less runoff during winter months.

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's **land application area**. Indicate the location of these practices. If not already in use, include a schedule for implementation of each of these measures. Attached details and specifications may be used to supplement this description. Examples of BMP measures could include but are not limited to: maintaining setbacks from surface waters for manure applications; managing irrigation practices to prevent ponding of wastewater on land application sites; never spray irrigating wastes onto frozen ground; consulting with the Department prior to applying any liquid waste to frozen or snow-covered ground; applying wastes at agronomic rates.

Plant sampling/tissue analysis	yes/no	Rotational grazing	yes/no
Conservation or reduced tillage	yes/no	Manure injection or incorporation	yes/no
Terraces or other water control structures	yes/no	Contour plantings	yes/no
Riparian buffers or vegetative filter strips	yes/no	Winter "scavenger" or cover crops	yes/no
Other examples			

9. Implementation, Operation, Maintenance and Record Keeping – Guidance

The permittee is required to develop guidance addressing implementation of NMP, proper operation and maintenance of the facility, and record keeping as described in Part II of the permit.

Has a guidance document been developed for the facility? ☐ Yes ☒ No

Certify the document addresses the following requirements:

Implementation of the NMP:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Facility operation and maintenance:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Record keeping and reporting:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Sample collection and analysis:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Manure transfer:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Provide name, date and location of most recent documentation:

If your answer to any of the above question is no, provide explanation

After implementation of this NMP, records will be thoroughly kept for all activities at the site including manure handling, samples, soil samples, BMP's, cattle numbers and handling as well as general facility information.

Section E - Land Application

Will manure be land applied to land either owned, rented, or leased by the owner or operator of the facility?

- ☐ No If no, then provide an explanation of how animal waste at this site are managed.
- ☒ Yes If yes, then the information requested in Section E must be provided.

Photos and/or Maps

Attach an aerial photograph or map of the site where manure is to be applied. (Use multiple photos/maps if necessary to show required details.) The photo(s)/map(s) must be printed on no larger than an 11"x17" piece of paper, and must clearly identify the following items:

- Individual field boundaries for all planned land application areas
- A name, number, letter or other means of identifying each individual land application field
- The location of any down-gradient surface waters
- The location of any down-gradient open tile line intake structures
- The location of any down-gradient sinkholes
- The location of any down-gradient agricultural well heads
- The location of all conduits to surface waters
- The specific manure/waste handling or nutrient management restrictions associated with each land application field.
- The soil type(s) present and their locations within the individual land application field(s)
- The location of buffers and setbacks around state surface waters, well heads, etc.

Land Application Equipment Calibration

Describe the type of equipment used to land apply wastes and the calibrating procedures:

Custom spreaders will be used; manure will be tested as will the soil to determine the application rate for each field; the spreader will calibrate their machine and use a gps when applying.

Manure Sampling and Analysis Procedures

A representative manure sample will be analyzed a minimum of once annually for Total Nitrogen, and Total Phosphorus. Analysis results will be reported in lbs/ton or lbs/1,000 gal. Results of these analyses will be used in determining application rates for manure, litter, and process wastewater.

Manure Sample collection will occur according to the following method:

- ☒ The recommended method(s) found in Section 5 of Department Circular DEQ 9
- ☐ Other (describe) _____

Soil Sampling and Analysis Procedures

A representative soil sample from the top 6 inch layer of soil in each field will be analyzed for phosphorus content at least once every five years. Analyses will be conducted by a qualified laboratory, using the Olsen P test. Results will be reported in parts per million (ppm) and will be used in determining application rates for manure, litter, and process wastewater.

Soil sample collection will occur according to the following method:

- ☒ The recommended method(s) found in Section 5 of Department Circular DEQ 9
- ☐ Other (describe) _____

Completing Risk Ratings

Each site category's weighting factor in TABLE 3 is multiplied by the site risk rating (value) to get a weighted risk value. All categories are rated (according to individual category instructions), and the overall rating is the sum of all values. After individual sites/fields are rated, refer to the appropriate vulnerability rating in Table 4.

TABLE 3. PHOSPHORUS INDEX ASSESSMENT

Map #10 Field #2

SITE CATEGORY FACTOR	NONE (0)	LOW (1)	MEDIUM (2)	HIGH (4)	VERY HIGH (8)	RISK VALUE (0,1,2,4,8)	WEIGHT FACTOR	WEIGHTED RISK FACTOR
Soil Erosion	N/A	<5 ton/ac/yr	5-10 tons/ac/yr	10-15 tons/ac/yr	>15 tons/ac/yr	1	X 1.5	1.5
Furrow Irrigation Erosion	N/A	Tailwater recovery, QS >6 very erodible soils, or QS >10 other soils	QS >10 for erosion resistant soils	QS >10 for erodible soils	QA >6 for very erodible soils	0	X 1.5	0
Sprinkler Irrigation Erosion	All sites 0-3% slope, all sandy sites, or site evaluation indicates little or no runoff, large spray on silts 3-8%	Medium spray on silty soils 3-15% slopes, large spray on silty soils 8-15% slope low spray on silt soils 3-8%, large spray on clay soil 3-15% slope	Medium spray on clay soils 3-8% slopes, large spray on clay soils >15% slope, medium spray on silt soil >15% slope	Medium spray on clay soils >8% slope, low spray on clay soil 3-8% slope, low spray on silty soils >15% slopes	Low spray on clay soils >8% slopes.	0	X 0.5	0
Runoff Class	Negligible	Very Low or low	Medium	High	Very High	2	X 0.5	1.0
Bray P1 Soil Test P	---	<30 ppm	30-60 ppm	60-120 ppm	>120 ppm		X 1.0	
Olson Soil Test P	---	<20 ppm	20-40 ppm	40-80 ppm	>80 ppm	1	X 1.0	1.0
Commercial P Fertilizer Application Method	None Applied	Placed with planter or injected deeper than 2 inches.	Incorporated <3 months prior to planting or surface applied during the growing season.	Incorporated >3 months before crop or surface applied <3 months before crop emerges.	Surface applied >3 months before crop emerges.	0	X 1.0	0
Commercial P Fertilizer Application Method	None Applied	Placed with planter or injected deeper than 2 inches.	Incorporated <3 months prior to planting or surface applied <3 months before crop.	Incorporated >3 months before crop or surface applied <3 months before crop.	Surface applied >3 months before crop emerges.	0	X 1.0	0
Commercial P Fertilizer Application Rate	None Applied	<30 lbs/ac P ₂ O ₅	31-60 lbs/ac P ₂ O ₅	61-150 lbs/ac P ₂ O ₅	>150 lbs/ac P ₂ O ₅	0	X 1.0	0
Organic P Source Application Method	None Applied	Injected deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season.	Incorporated >3 months before crop or surface applied <3 months before crop emerges.	Surface applied to pasture or >3 months before crop emerges.	0	X 1.0	0
Organic P Application Rate	None Applied	<30 lbs/ac P ₂ O ₅	31-60 lbs/ac P ₂ O ₅	61-150 lbs/ac P ₂ O ₅	>150 lbs/ac P ₂ O ₅	0	X 1.0	0
Distance to Concentrated Surface Water Flow	>1,000 feet	200-1000 feet, or functioning grasses waterways in concentrated surface water	100-200 feet	<100 feet	0 feet or applications are directly into concentrated surface water flow areas.	0	X 1.0	0
Site/Field Total Phosphorus Index Value								3.5

Completing Risk Ratings

Each site category's weighting factor in TABLE 3 is multiplied by the site risk rating (value) to get a weighted risk value. All categories are rated (according to individual category instructions), and the overall rating is the sum of all values. After individual sites/fields are rated, refer to the appropriate vulnerability rating in Table 4.

TABLE 3. PHOSPHORUS INDEX ASSESSMENT *Maps # 3, 16c, 17*

SITE CATEGORY FACTOR	NONE (0)	LOW (1)	MEDIUM (2)	HIGH (4)	VERY HIGH (8)	RISK VALUE (0,1,2,4,8)	WEIGHT FACTOR	WEIGHTED RISK FACTOR
Soil Erosion	N/A	<5 ton/ac/yr	5-10 tons/ac/yr	10-15 tons/ac/yr	>15 tons/ac/yr	1	X 1.5	1.5
Furrow Irrigation Erosion	N/A	Tailwater recovery, QS >6 very erodible soils, or QS >10 other soils	QS >10 for erosion resistant soils	QS >10 for erodible soils	QA >6 for very erodible soils	0	X 1.5	0
Sprinkler Irrigation Erosion	All sites 0-3% slope, all sandy sites, or site evaluation indicates little or no runoff, large spray on silts 3-8%	Medium spray on silty soils 3-15% slopes, large spray on silty soils 8-15% slope, low spray on silt soils 3-8%, large spray on clay soil 3-15% slope	Medium spray on clay soils 3-8% slopes, large spray on clay soils >15% slope, medium spray on silt soil >15% slope	Medium spray on clay soils >8% slope, low spray on clay soil 3-8% slope, low spray on silty soils >15% slopes	Low spray on clay soils >8% slopes.	0	X 0.5	0
Runoff Class	Negligible	Very Low or low	Medium	High	Very High	2	X 0.5	1.0
Bray P1 Soil Test P	---	<30 ppm	30-60 ppm	60-120 ppm	>120 ppm		X 1.0	
Olson Soil Test P	---	<20 ppm	20-40 ppm	40-80 ppm	>80 ppm	1	X 1.0	1.0
Commercial P Fertilizer Application Method	None Applied	Placed with planter or injected deeper than 2 inches.	Incorporated <3 months prior to planting or surface applied during the growing season.	Incorporated >3 months before crop or surface applied <3 months before crop emerges.	Surface applied >3 months before crop emerges.	0	X 1.0	0
Commercial P Fertilizer Application Method	None Applied	Placed with planter or injected deeper than 2 inches.	Incorporated <3 months prior to planting or surface applied <3 months before crop.	Incorporated >3 months before crop or surface applied <3 months before crop.	Surface applied >3 months before crop emerges.	0	X 1.0	0
Commercial P Fertilizer Application Rate	None Applied	<30 lbs/ac P ₂ O ₅	31-90 lbs/ac P ₂ O ₅	91-150 lbs/ac P ₂ O ₅	>150 lbs/ac P ₂ O ₅	0	X 1.0	0
Organic P Source Application Method	None Applied	Injected deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season.	Incorporated >3 months before crop or surface applied <3 months before crop emerges.	Surface applied to pasture or >3 months before crop emerges.	0	X 1.0	0
Organic P Application Rate	None Applied	<30 lbs/ac P ₂ O ₅	31-80 lbs/ac P ₂ O ₅	91-150 lbs/ac P ₂ O ₅	>150 lbs/ac P ₂ O ₅	0	X 1.0	0
Distance to Concentrated Surface Water Flow	>1,000 feet	200-1000 feet, or functioning grasses waterways in concentrated surface water	100-200 feet	<100 feet	0 feet or applications are directly into concentrated surface water flow areas.	0	X 1.0	0
Site/Field Total Phosphorus Index Value								3.5

Completing Risk Ratings

Each site category's weighting factor in TABLE 3 is multiplied by the site risk rating (value) to get a weighted risk value. All categories are rated (according to individual category instructions), and the overall rating is the sum of all values. After individual sites/fields are rated, refer to the appropriate vulnerability rating in Table 4.

TABLE 3. PHOSPHORUS INDEX ASSESSMENT

Map #5 Field 1

SITE CATEGORY FACTOR	NONE (0)	LOW (1)	MEDIUM (2)	HIGH (4)	VERY HIGH (8)	RISK VALUE (0,1,2,4,8)	WEIGHT FACTOR	WEIGHTED RISK FACTOR
Soil Erosion	N/A	<5 ton/ac/yr	5-10 tons/ac/yr	10-15 tons/ac/yr	>15 tons/ac/yr	1	X 1.5	1.5
Furrow Irrigation Erosion	N/A	Tailwater recovery, QS >6 very erodible soils, or QS >10 other soils	QS >10 for erosion resistant soils	QS >10 for erodible soils	QA >6 for very erodible soils	0	X 1.5	0
Sprinkler Irrigation Erosion	All sites 0-3% slope, all sandy sites, or site evaluation indicates little or no runoff, large spray on silts 3-8%	Medium spray on silty soils 3-15% slopes, large spray on silty soils 8-15% slope, low spray on silt soils 3-8%, large spray on clay soil 3-15% slope	Medium spray on clay soils 3-8% slopes, large spray on clay soils >15% slope, medium spray on silt soil >15% slope	Medium spray on clay soils >8% slope, low spray on clay soil 3-8% slope, low spray on silty soils >15% slopes	Low spray on clay soils >8% slopes.	0	X 0.5	0
Runoff Class	Negligible	Very Low or low	Medium	High	Very High	2	X 0.5	1.0
Bray P1 Soil Test P	---	<30 ppm	30-60 ppm	60-120 ppm	>120 ppm		X 1.0	
Olsen Soil Test P	---	<20 ppm	20-40 ppm	40-80 ppm	>80 ppm	1	X 1.0	1.0
Commercial P Fertilizer Application Method	None Applied	Placed with planter or injected deeper than 2 inches.	Incorporated <3 months prior to planting or surface applied during the growing season.	Incorporated >3 months before crop or surface applied <3 months before crop emerges.	Surface applied >3 months before crop emerges.	0	X 1.0	0
Commercial P Fertilizer Application Method	None Applied	Placed with planter or injected deeper than 2 inches.	Incorporated <3 months prior to planting or surface applied <3 months before crop.	Incorporated >3 months before crop or surface applied <3 months before crop.	Surface applied >3 months before crop emerges.	0	X 1.0	0
Commercial P Fertilizer Application Rate	None Applied	<30 lbs/ac P ₂ O ₅	31-90 lbs/ac P ₂ O ₅	91-150 lbs/ac P ₂ O ₅	>150 lbs/ac P ₂ O ₅	0	X 1.0	0
Organic P Source Application Method	None Applied	Injected deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season.	Incorporated >3 months before crop or surface applied <3 months before crop emerges.	Surface applied to pasture or >3 months before crop emerges.	0	X 1.0	0
Organic P Application Rate	None Applied	<30 lbs/ac P ₂ O ₅	31-90 lbs/ac P ₂ O ₅	91-150 lbs/ac P ₂ O ₅	>150 lbs/ac P ₂ O ₅	0	X 1.0	0
Distance to Concentrated Surface Water Flow	>1,000 feet	200-1000 feet, or functioning grasses waterways in concentrated surface water	100-200 feet	<100 feet	0 feet or applications are directly into concentrated surface water flow areas.	0	X 1.0	0
Site/Field Total Phosphorus Index Value								

Completing Risk Ratings

Each site category's weighting factor in TABLE 3 is multiplied by the site risk rating (value) to get a weighted risk value. All categories are rated (according to individual category instructions), and the overall rating is the sum of all values. After individual sites/fields are rated, refer to the appropriate vulnerability rating in Table 4.

TABLE 3. PHOSPHORUS INDEX ASSESSMENT

Map #16 Fields 849

SITE CATEGORY FACTOR	NONE (0)	LOW (1)	MEDIUM (2)	HIGH (4)	VERY HIGH (8)	RISK VALUE (0,1,2,4,8)	WEIGHT FACTOR	WEIGHTED RISK FACTOR
Soil Erosion	N/A	<5 ton/ac/yr	5-10 tons/ac/yr	10-15 tons/ac/yr	>15 tons/ac/yr	1	X 1.5	1.5
Furrow Irrigation Erosion	N/A	Tailwater recovery, QS >6 very erodible soils, or QS >10 other soils	QS >10 for erosion resistant soils	QS >10 for erodible soils	QA >6 for very erodible soils	0	X 1.5	0
Sprinkler Irrigation Erosion	All sites 0-3% slope, all sandy sites, or site evaluation indicates little or no runoff, large spray on silts 3-8%	Medium spray on silty soils 3-15% slopes, large spray on silty soils 8-15% slopes, low spray on silt soils 3-8%, large spray on clay soil 3-15% slope	Medium spray on clay soils 3-8% slopes, large spray on clay soils >15% slope, medium spray on silt soil >15% slope	Medium spray on clay soils >8% slope, low spray on clay soil 3-8% slope, low spray on silty soils >15% slopes	Low spray on clay soils >8% slopes.	0	X 0.5	0
Runoff Class	Negligible	Very Low or low	Medium	High	Very High	2	X 0.5	1.0
Bray P1 Soil Test P	---	<30 ppm	30-60 ppm	60-120 ppm	>120 ppm		X 1.0	
Olsen Soil Test P	---	<20 ppm	20-40 ppm	40-80 ppm	>80 ppm	1	X 1.0	1.0
Commercial P Fertilizer Application Method	None Applied	Placed with planter or injected deeper than 2 inches.	Incorporated <3 months prior to planting or surface applied during the growing season.	Incorporated >3 months before crop or surface applied <3 months before crop emerges.	Surface applied >3 months before crop emerges.	0	X 1.0	0
Commercial P Fertilizer Application Method	None Applied	Placed with planter or injected deeper than 2 inches.	Incorporated <3 months prior to planting or surface applied <3 months before crop.	Incorporated >3 months before crop or surface applied <3 months before crop.	Surface applied >3 months before crop emerges.	0	X 1.0	0
Commercial P Fertilizer Application Rate	None Applied	<30 lbs/ac P ₂ O ₅	31-90 lbs/ac P ₂ O ₅	91-150 lbs/ac P ₂ O ₅	>150 lbs/ac P ₂ O ₅	0	X 1.0	0
Organic P Source Application Method	None Applied	Injected deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season.	Incorporated >3 months before crop or surface applied <3 months before crop emerges.	Surface applied to pasture or >3 months before crop emerges.	0	X 1.0	0
Organic P Application Rate	None Applied	<30 lbs/ac P ₂ O ₅	31-90 lbs/ac P ₂ O ₅	91-150 lbs/ac P ₂ O ₅	>150 lbs/ac P ₂ O ₅	0	X 1.0	0
Distance to Concentrated Surface Water Flow	>1,000 feet	200-1000 feet, or functioning grasses waterways in concentrated surface water	100-200 feet	<100 feet	0 feet or applications are directly into concentrated surface water flow areas.	0	X 1.0	0
Site/Field Total Phosphorus Index Value								3.5

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure

Field Name and spreadable acres for each (for fields with identical crops and soils type):

Map # 10 Field #2 389 acres with 2-4% slope
(East of Sale Barn)

Crop 1 (year 1 or ?) plant species

40% Alfalfa / 80% Crested Wheat Grass

Irrigated (Y/N)

No

Yield Goal (ton/ac or bushel/ac)

2 1/2 Ton

N Content of soil as nitrate (lbs/acre or ppm)

12 ppm

P Content of soil as P₂O₅ (lbs/acre or ppm)

15 ppm

Time of Year When Application will Occur (month)

August

Application frequency (per year by month)

1 Annual application in August

Form of manure (liquid/solid)

Solid

Method of Application

Sprinkling

Is manure incorporated or broadcast?

Broadcast

Frequency of Application (yearly, biannual, etc.?)

yearly

Crop 2

Irrigated (Y/N)

Yield Goal (ton/ac or bushel/ac)

N Content of soil as Nitrate (lbs/acre or ppm)

P Content of soil as P₂O₅ (lbs/acre or ppm)

Time of Year When Application will Occur (month)

Application frequency (per year, by month)

Form of manure (liquid/solid)

Method of Application

Is manure broadcast, injected or incorporated?

Frequency of Application (Annual, Biannual, etc?)

- d) The permittee will complete the *Nutrient Budget Worksheet*, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet			
Site/Field: <i>MAP #10 Field 2</i>			
Nutrient Budget		Nitrogen-based Application	Phosphorus-based Application
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9	<i>55 lbs/acre</i>	
(-)	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable	<i>40 lbs/acre</i>	
(-)	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)	<i>0</i>	
(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	<i>0</i>	
(-)	Nutrients supplied in irrigation water, lbs/acre	<i>0</i>	
	= Additional Nutrients Needed, lbs/acre	<i>15 lbs/acre</i>	
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)	<i>20 lbs/ton</i>	
(x)	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)	<i>.75</i>	
	= Available Nutrients in Manure, lbs/ton or lbs/1,000 gal	<i>15 lbs/ton</i>	
	Additional Nutrients needed, lbs/acre (calculated above)	<i>15 lbs/ton</i>	
(/)	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)	<i>15 lbs/ton</i>	
	= Manure Application Rate, tons/acre or 1,000 gal/acre	<i>1 ton/acre</i>	
Comments:			
<i>With an Olson P Soil test of 15 ppm - manure will be applied to meet N needs of hay</i>			

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and spreadable acres for each (for fields with identical crops and soils type):	
<i>Map #16 Fields 849 45.8 acres with 2-4% slope</i>	
Crop 1 (year 1 or ?) plant species	<i>10% Alfalfa / 90% Crested wheat grass</i>
Irrigated (Y/N)	<i>No</i>
Yield Goal (ton/ac or bushel/ac)	<i>2 1/2 Ton</i>
N Content of soil as nitrate (lbs/acre or ppm)	<i>20 ppm</i>
P Content of soil as P ₂ O ₅ (lbs/acre or ppm)	<i>12 ppm</i>
Time of Year When Application will Occur (month)	<i>August</i>
Application frequency (per year by month)	<i>1 Annual application in August</i>
Form of manure (liquid/solid)	<i>Solid</i>
Method of Application	<i>Sprinkling</i>
Is manure incorporated or broadcast?	<i>Broadcast</i>
Frequency of Application (yearly, biannual, etc.?)	<i>yearly</i>
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as Nitrate (lbs/acre or ppm)	
P Content of soil as P ₂ O ₅ (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year, by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure broadcast, injected or incorporated?	
Frequency of Application (Annual, Biannual, etc?)	

Phosphorus Risk Assessment

The permittee shall assess the risk of phosphorus contamination of state waters. An assessment shall be conducted for each field, under the control of the operator, to which manure, litter or process wastewater will or may be applied. If a new field is added in the future, then the permittee must submit a revised (modified) NMP. The permittee has the option of using either Method A or Method B (below) to complete the assessment. Copies of all tables and calculations used to complete the assessments, as well as the results of the assessments, shall be submitted to the Department and copies shall be maintained on-site at the facility and available for Departmental review. The results of the assessments shall be used to determine the appropriate basis for land application of wastes from the facility.

Method Used

Indicate which method will be used to determine phosphorus application:

- ☒ Method A – Representative Soil Sample
☐ Method B – Phosphorus Index

Method A – Representative Soil Sample

- Obtain one or more representative soil sample(s) from the field.
- Have the sample analyzed for Phosphorus by a qualified lab. The “Olsen P test” must be used for the analysis, and the result must be reported in parts per million (ppm).
- Using the results of the Olsen P test, determine the application basis according to the Table below

Soil Test	
<i>Olsen P Soil Test Result (ppm)</i>	<i>Application Basis</i>
<25.0	Nitrogen Needs Of Crop
25.1 - 100.0	Phosphorus Needs Of Crop
100.0 - 150.0	Phosphorus Needs up to Crop Removal Rate
>150.0	No Application

Method B – Phosphorus Index

- Complete a Phosphorus Index according to for each crop grown on each field. Complete table in Appendix A to calculate phosphorus index. For information on filling out specific sections Appendix A, please refer to Attachment 2 of Department Circular DEQ 9.
- Using the calculated Total Phosphorus Index Value, assign the overall site/field vulnerability to phosphorus loss according to the table below.

Total Phosphorus	
<i>Total Phosphorus Index Value</i>	<i>Site Vulnerability to Phosphorus Loss</i>
<11	Low
11-21	Medium
22-43	High
>43	Very High

- Using the calculated Site Vulnerability to Phosphorus Loss, determine the appropriate application basis according to the table below.

Site Vulnerability to Phosphorus Loss	
<i>Site Vulnerability to Phosphorus Loss</i>	<i>Application Basis</i>
Low	Nitrogen Needs
Medium	Nitrogen Needs
High	Phosphorus Need Up to Crop Removal
Very High	Phosphorus Crop Removal or No Application

- d) The permittee will complete the *Nutrient Budget Worksheet*, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

[illegible]

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. Fields with identical crops and soil types may be grouped together.

Crops and Manure

Field Name and spreadable acres for each (for fields with identical crops and soils type):

Map # 5 Field 1 879 acres with 2-4% slope
West CRP

Crop 1 (year 1 or ?) plant species

40% Alfalfa / 60% Grass

Irrigated (Y/N)

No

Yield Goal (ton/ac or bushel/ac)

2 1/2 Tons

N Content of soil as nitrate (lbs/acre or ppm)

20 ppm

P Content of soil as P₂O₅ (lbs/acre or ppm)

12 ppm

Time of Year When Application will Occur (month)

August

Application frequency (per year by month)

1 Annual application in August

Form of manure (liquid/solid)

Solid

Method of Application

Sprinkling

Is manure incorporated or broadcast?

Broadcast

Frequency of Application (yearly, biannual, etc.?)

yearly

Crop 2

Irrigated (Y/N)

Yield Goal (ton/ac or bushel/ac)

N Content of soil as Nitrate (lbs/acre or ppm)

P Content of soil as P₂O₅ (lbs/acre or ppm)

Time of Year When Application will Occur (month)

Application frequency (per year, by month)

Form of manure (liquid/solid)

Method of Application

Is manure broadcast, injected or incorporated?

Frequency of Application (Annual, Biannual, etc?)

- d) The permittee will complete the *Nutrient Budget Worksheet*, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

[illegible]

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure

Field Name and spreadable acres for each (for fields with identical crops and soils type):

Map # 3 Field 1 Map # 16a Field # 2 Map # 17 936 acres with
2-4% slope (Old hayfield & west CRP)

Crop 1 (year 1 or ?) plant species

20% ALFALFA / 80% GRASS

Irrigated (Y/N)

No

Yield Goal (ton/ac or bushel/ac)

2 1/2 TONS

N Content of soil as nitrate (lbs/acre or ppm)

20 ppm

P Content of soil as P₂O₅ (lbs/acre or ppm)

12 ppm

Time of Year When Application will Occur (month)

August

Application frequency (per year by month)

1 Annual application in August

Form of manure (liquid/solid)

Solid

Method of Application

Sprinkling

Is manure incorporated or broadcast?

Broadcast

Frequency of Application (yearly, biannual, etc.?)

yearly

Crop 2

Irrigated (Y/N)

Yield Goal (ton/ac or bushel/ac)

N Content of soil as Nitrate (lbs/acre or ppm)

P Content of soil as P₂O₅ (lbs/acre or ppm)

Time of Year When Application will Occur (month)

Application frequency (per year, by month)

Form of manure (liquid/solid)

Method of Application

Is manure broadcast, injected or incorporated?

Frequency of Application (Annual, Biannual, etc?)

- d) The permittee will complete the *Nutrient Budget Worksheet*, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

[illegible]

Permittee Information:

This Form NMP must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Permittees Must Complete the Following Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

A. Name (Type or Print)

W. William Weeks, Square Butte Land & Cattle Company, LLC

B. Title (Type or Print)

Manager

C. Phone No.

703 999-7569

D. Signature

William Weeks, mgr. Sq. Butte L & C, LLC

E. Date Signed

12/23/11

Return the Form NMP, Nutrient Management Plan to:

Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901
(406) 444-3080

RECEIVED

JAN 03 2012

DEQWPB
PERMITTING & COMPLIANCE DIV.

Land Application Data

Map #	Field #	Acres	Current Crop		Soil Type	Suggested		Total tons
			Crested	Wheat		Slope	Topdress	
6	9	29.14	X	X	#220 Tamaneen	0-2%	60 lbs N	66.41
6	8	85.97	X	X	#220 Tamaneen	0-2%	60 lbs N	196.87
10	2	163.55	X	X	#94	2-4%	30 lbs N	57.5
3	1	72.1	X	X	#93 Fairfield	0-2%	30 lbs N	40.25
19	2	19.96	X	X	#93 Fairfield	0-2%	30 lbs N	21.85
17	9	34.57	X	X	#93 Fairfield	0-2%	30 lbs N	39.1
17	4	49.82	X	X	#270 Winifred	2-8%	30 lbs N	23
5	1	149.56	X	X	#93 Fairfield	0-2%	30 lbs N	115
16	2	39.55	X	X	#93 Fairfield	0-2%	30 lbs N	34.5

594.48 tons

* Manure Production - 750 head 69 lbs/day for 170 days @ 92% moisture
 750 x 69 x 170 days = 4398.75 Tons

$\times 1.08$
 351.9 Tons Dry Matter Basis

* Map #	Field #	Total Acres	Useable Acres
10	2	163.55	50
3	1	72.1	35
17	4	49.82	30
5	1	149.56	100
16	2	39.55	30

- * No irrigation on any field
- * Manure applied by spreader in the fall; solid manure

LABORATORY ANALYTICAL REPORT

Client: B and C Ag
Lab ID: Consultants
Client Sample ID: B11121735-001
Brad Schmitt 21896

Report Date: 01/03/12
Collection Date: Not Provided
Date Received: 12/20/11

Manure Testing - CNMP Manure Package

<u>Analyte</u>	<u>Dry Basis</u> <u>mg/kg</u>	<u>----- As Received Moisture Basis -----</u>		
		<u>Percent</u>	<u>mg/kg</u>	<u>pounds/ton</u>
Moisture	0.0	22.9		
Solids	100.0	77.1		
Total Kjeldahl Nitrogen	12,900	0.99	9,946	19.9
Nitrate as N	108	0.01	83	0.2
Nitrogen, Total as N	13,008	1.00	10,029	20.1
Phosphorus, Total as P	4,090	0.32	3,153	6.3
Phosphorus, as P ₂ O ₅	9,366	0.72	7,221	14.4
Potassium, Total as K	12,600	0.97	9,715	19.4
Potassium, as K ₂ O	15,120	1.17	11,658	23.3

NOTES:

To adjust to a different moisture, divide the current value by the percent dry matter (expressed as a decimal), then multiply by the desired percent dry matter (also expressed in a decimal). For example, total nitrogen was 80 pounds per ton at 50% moisture and the usual spreading moisture is 45%, 80 divided by 0.50 = 160 pounds of total nitrogen per dry ton of manure. Then multiply 160 x 0.55 (% DM) = 88 total pounds of nitrogen per ton at 45% moisture.

For liquid or semi-liquid manure slurry you can calculate pounds per 1000 gallons by multiplying the pounds/ton concentration by 4.

mg/kg = ppm

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: B and C Ag Consultants
 Project: Lewistown Propane
 Lab ID: B11121735-001
 Client Sample ID 21896 Brad Schmitt

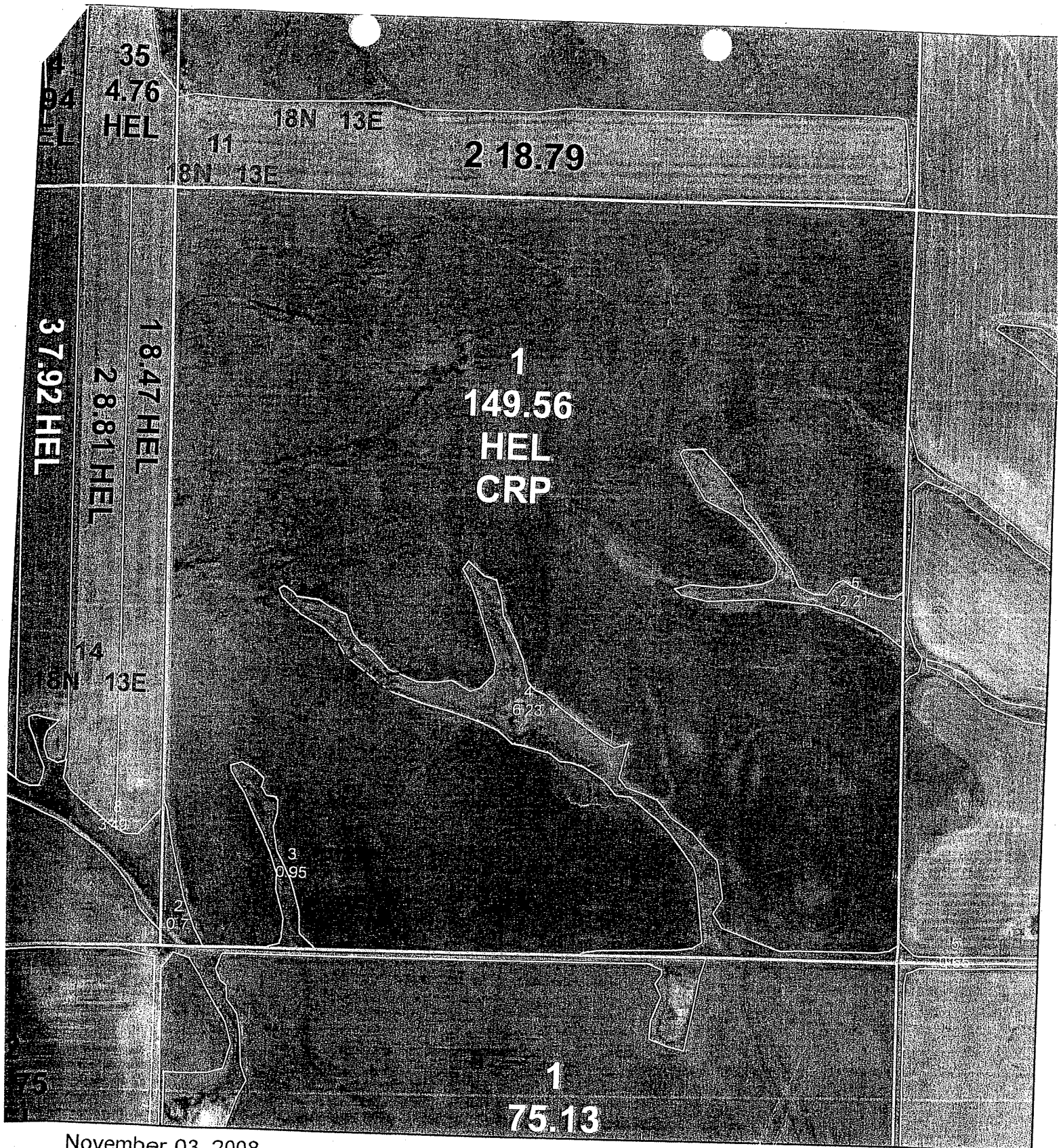
Report Date: 01/03/12
 Collection Date: Not Provided
 Date Received: 12/20/11
 Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	22.9	wt%		0.2		D2074	12/23/11 07:53 / srm
CHEMICAL CHARACTERISTICS							
Total Kjeldahl Nitrogen	12900	mg/kg		10		ASA31-3	12/28/11 10:11 / srm
Nitrate as N, KCL Extract	108	mg/kg		1		ASA33-8	12/29/11 11:14 / srm
METALS, TOTAL - EPA SW846							
Phosphorus	4090	mg/kg		10		SW6010B	12/28/11 08:57 / rth
Potassium	12600	mg/kg		50		SW6010B	12/28/11 08:57 / rth

Report
Definitions:

RL - Analyte reporting limit.
 QCL - Quality control limit.

MCL - Maximum contaminant level.
 ND - Not detected at the reporting limit.



November 03, 2008

Fergus County, MT



USDA
Farm Service Agency



This map is for USDA-FSA Program administration only. There is no guarantee or representation as to the accuracy, currency, suitability or reliability for any other purpose. The user accepts the map "As Is" and assumes all risks associated with its use. Map is to scale, but vary from map to map.

Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact wetland boundaries and determinations, or contact NRCS.

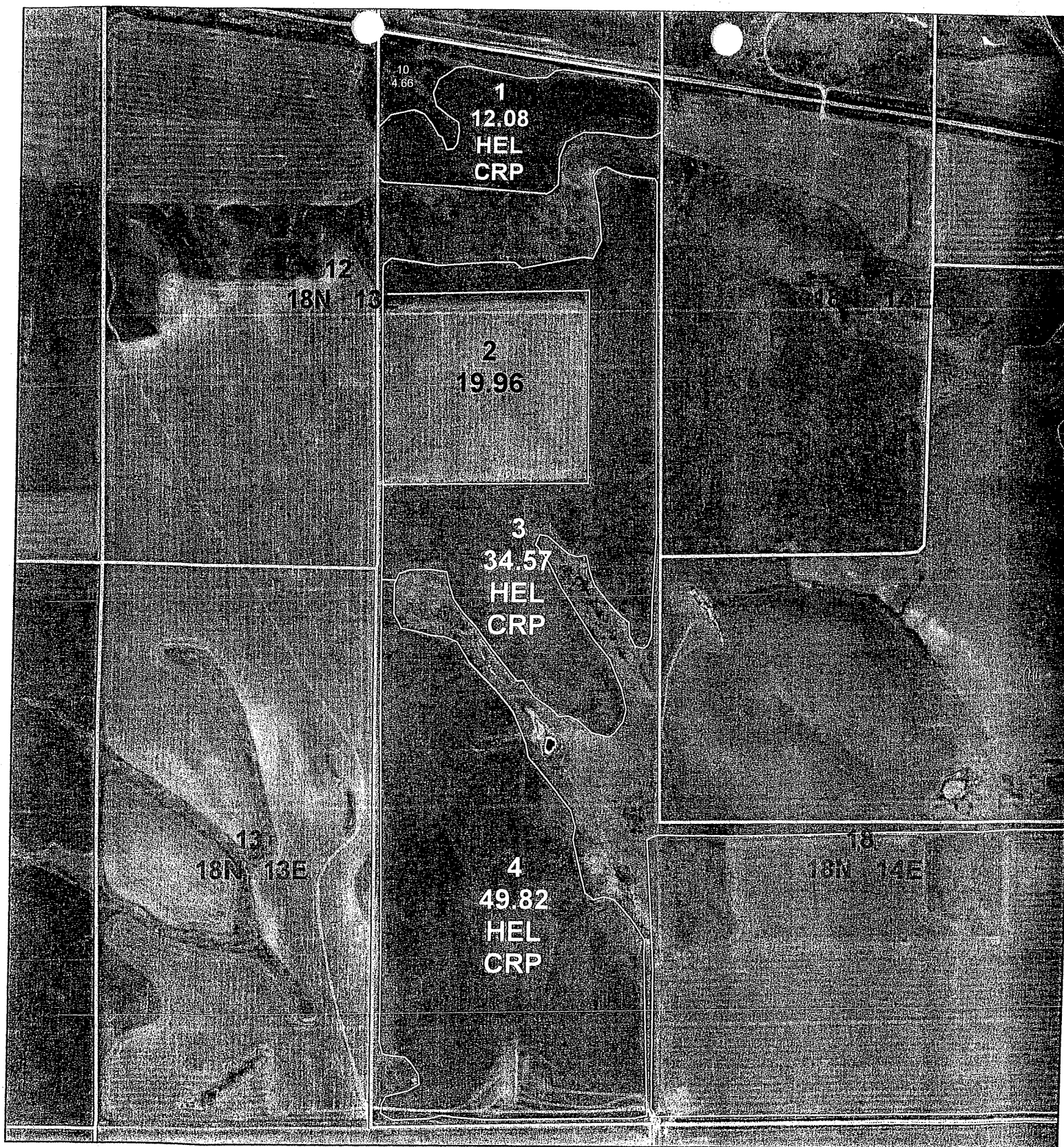
Farm - Tract

4618 - 4213

Map #5

CROP YEAR 2008

Rangeland



Date

County Name

Farm - Tract

Grid:

CROP YEAR 2008

Rangeland

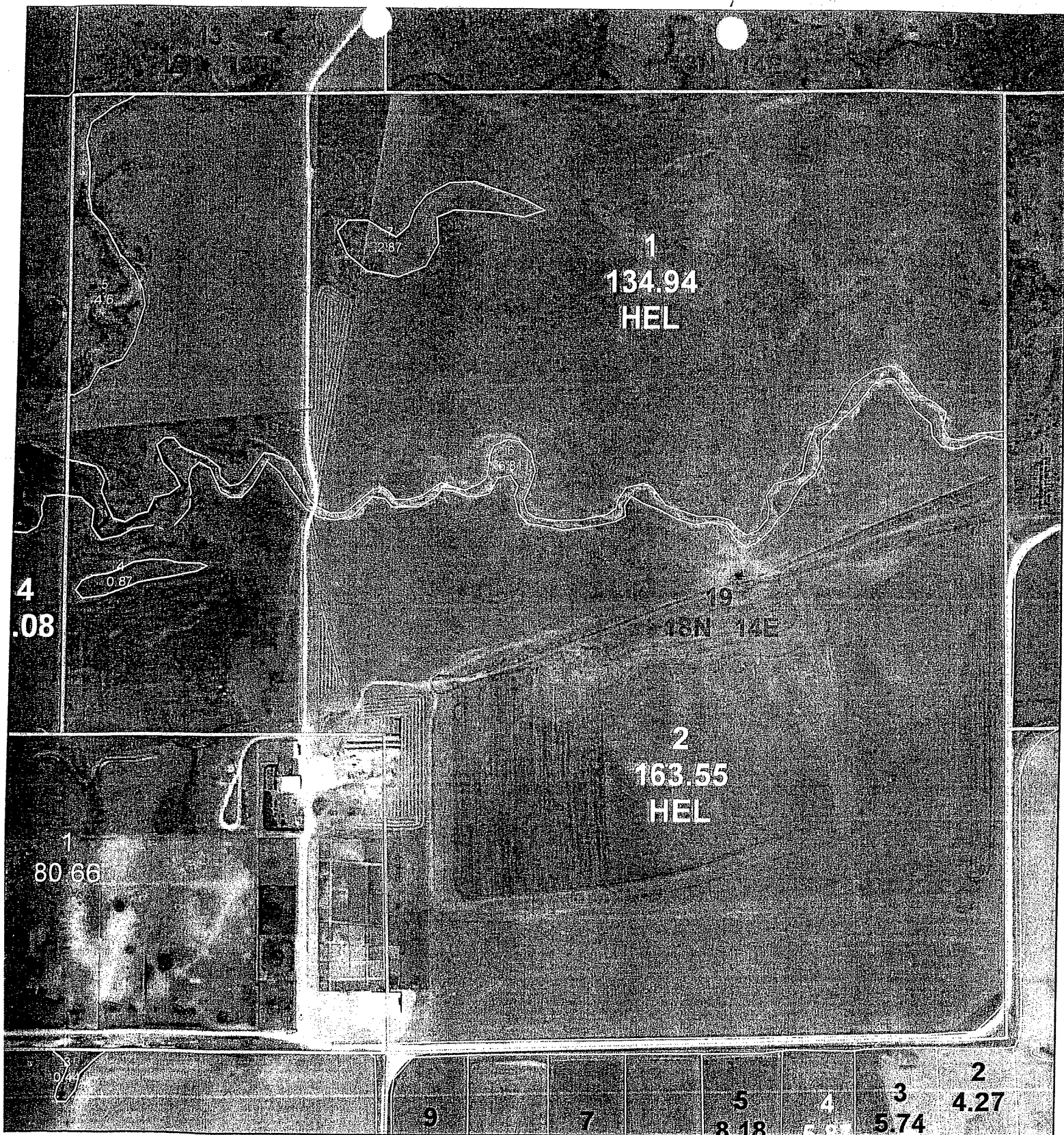


USDA
Farm Service Agency



This map is for USDA-FSA Program administration only. There is no guarantee or representation as to the accuracy, currency, suitability or reliability for any other purpose. The user accepts the map "As Is" and assumes all risks associated with its use. Map is to scale, but vary from map to map.

Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact wetland boundaries and determinations, or contact NRCS.



November 03, 2008

Fergus County, MT

Farm - Tract
4618 - 4239

Map #10

CROP YEAR 2008

Rangeland

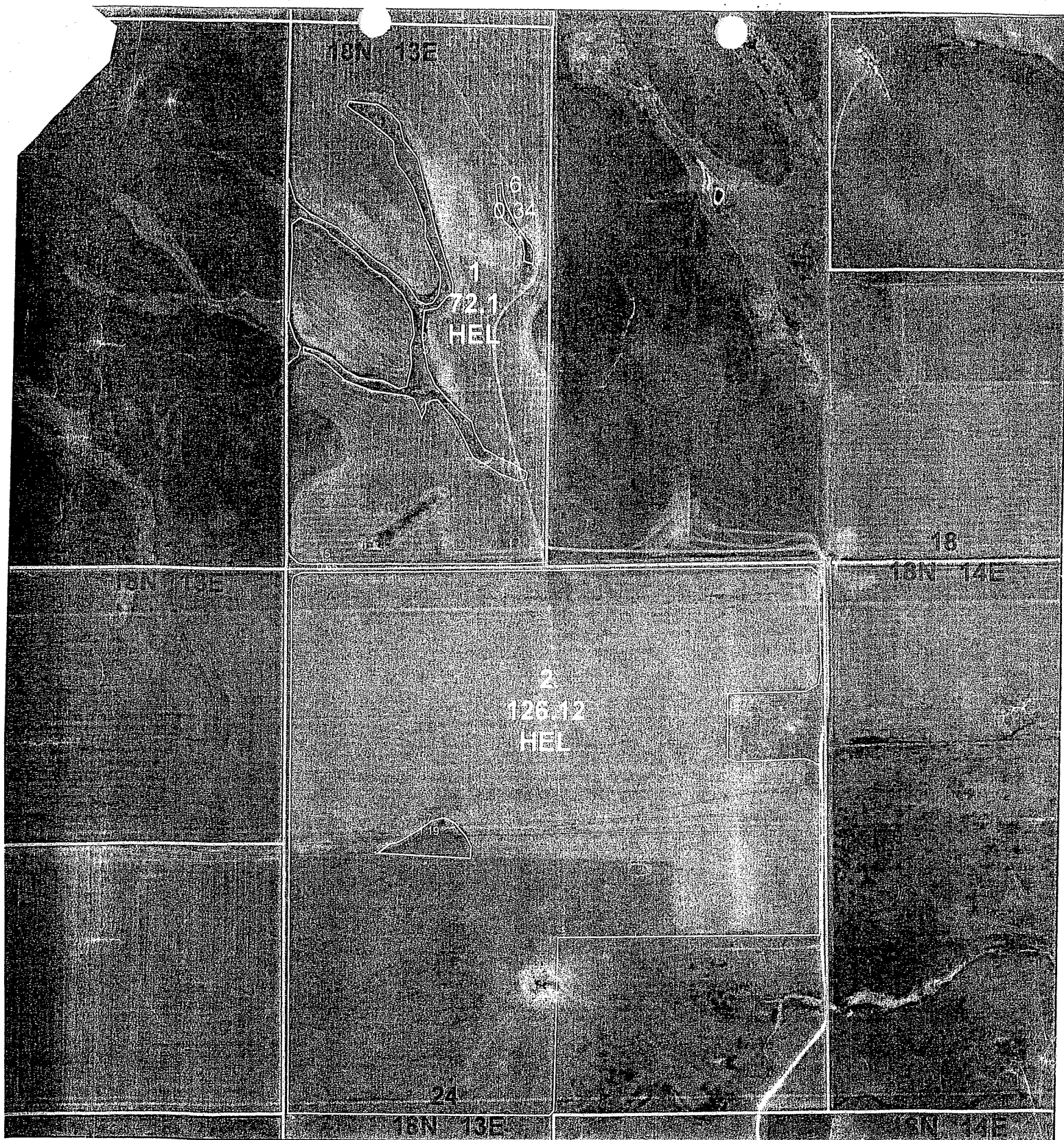


USDA
Farm Service Agency



This map is for USDA-FSA Program administration only. There is no guarantee or representation as to the accuracy, currency, suitability or reliability for any other purpose. The user accepts the map "As Is" and assumes all risks associated with its use. Map is to scale, but vary from map to map.

Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact wetland boundaries and determinations, or contact NRCS.



November 03, 2008

Fergus County

Map # 3

Farm - Tract
4618 - 4212

CROP YEAR 2008

Rangeland

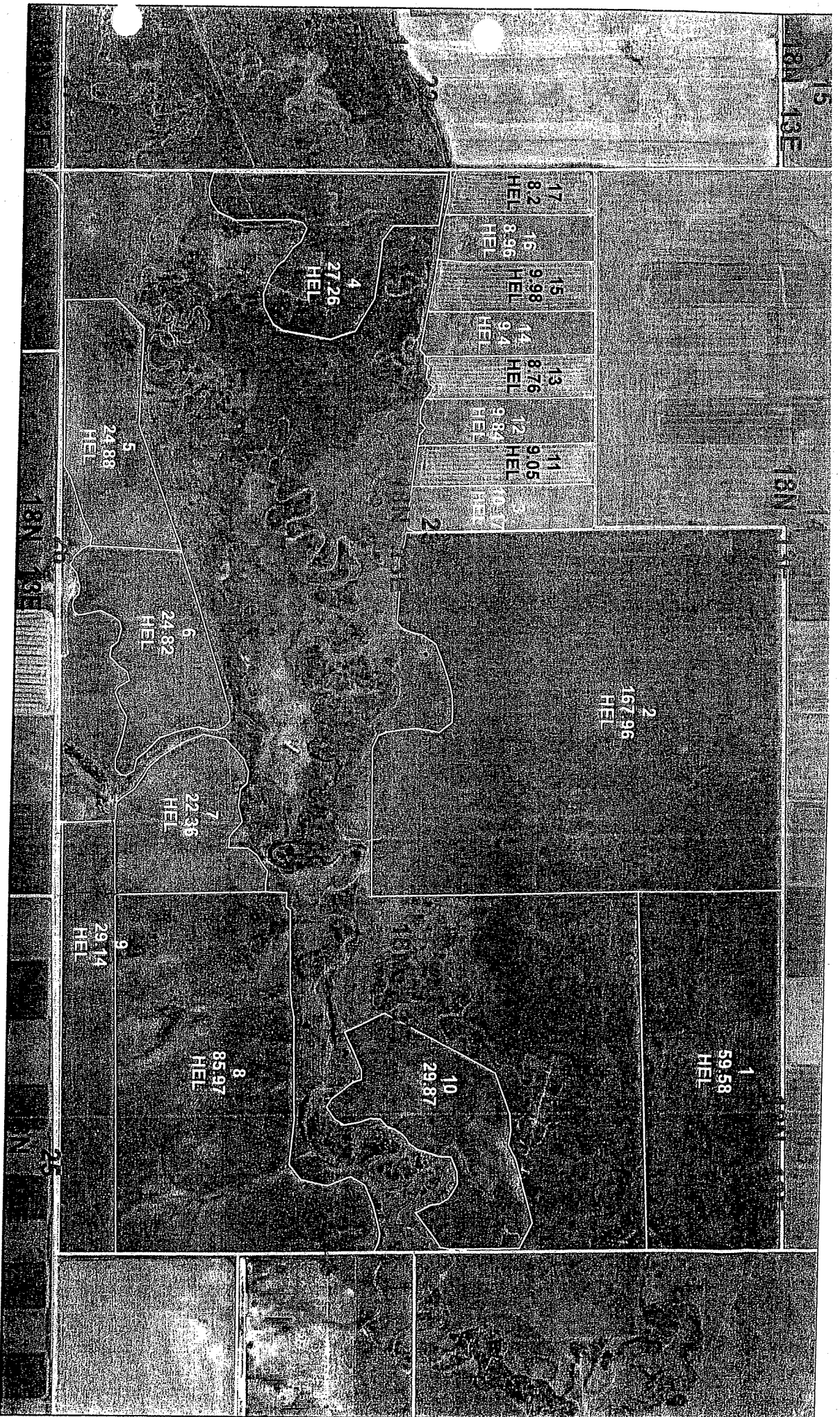


USDA
Farm Service Agency



This map is for USDA-FSA Program administration only. There is no guarantee or representation as to the accuracy, currency, suitability or reliability for any other purpose. The user accepts the map "As Is" and assumes all risks associated with its use. Map is to scale, but vary from map to map.

Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact wetland boundaries and determinations, or contact NRCS.



November 03, 2008

Farm - Tract
4618 - 4238

Fergus County

CROP YEAR 2008

Map # 16

☒ Rangeland



Farm Service Agency

USDA



This map is for USDA-FSA Program administration only. There is no guarantee or representation as to the accuracy, currency, suitability or reliability for any other purpose. The user accepts the map as is and assumes all risks associated with its use. Map is to scale, but vary from map to map.

Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact

Profile#:

Address: Geyser, MT

Page 2 of 2

Field: East of Shelter Belt

Acres:

RESULTS OF DEEP SOIL ANALYSIS												Dryland					
Irrigated			NO3-N ppm	NO3-N lbs/ac	Phos. ppm	K ppm	SO4.S ppm	Text	Lime	Soil pH	Salt Haz	Na meq	PAW				
Lab No.	Depth	OM %															
962781	0-6	5.4	17	34	12		5	L	M+	8.1	0.6		0.8				
962982	-20		3	14			5	L	M+				0.4				
													1.2				
TOTAL				48													
Lab No.	Zinc ppm	Iron ppm	Copper ppm	Mn ppm	Borin ppm	CA ppm	Mg ppm	Previous Crop: Grass Desired Crop: Grass Anticipate Yield Nitrogen Required Subtract avail. N (2ft)(100%) Subtract avail. N (4ft)(40%) Subtract O.N released Subtract N from manure Subtract N from legume Subtract Others Add N for straw tie up Add N for Protein Goal Nitrogen Suggested					Option I	Option II	Option III		
Lab No.	Base sat	Ca %	Mg %	K %	Na %	CEC							100	150			
													50	50			
Lab No	meq 100	Ca %	Mg %	K %	Na %								40	40			
Yield Based On Water (+ -) X =																	
													10	60			

[illegible]

If you have any questions please call

Ray or Mike
406-259-5779

Option 1 Fertilizer Suggested					Option 2 Fertilizer Suggested					Option 3 Fertilizer Suggested				
Crop: Grass		Yield Goal			Crop:		Yield Goal			Crop		Yield Goal		
	Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band		Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band		Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band
N	10	25			N	60	60			N				
P2O5	25	25			P2O5	30	30			P2O5				
K2O	30	0			K2O	30	30			K2O				
S	30	30			S	30	30			S				
Zn					Zn					Zn				
Fe					Fe					Fe				
Cu					Cu					Cu				
Mn					Mn					Mn				

Dec. 21. 1911 PM
 Date Rec'd:
 Date Sent: 12/21/11
 Profile#:

Grove Brad Schmitt
 Address: Geyser, MT

B & C AG CONSUMERS TAIL NO. 2492 P. 1
 P.O. Box 1184, 315 South Street
 Billings MT 59103-1184 Page 1 of 2

Dealer: Lewistown Propane Denton

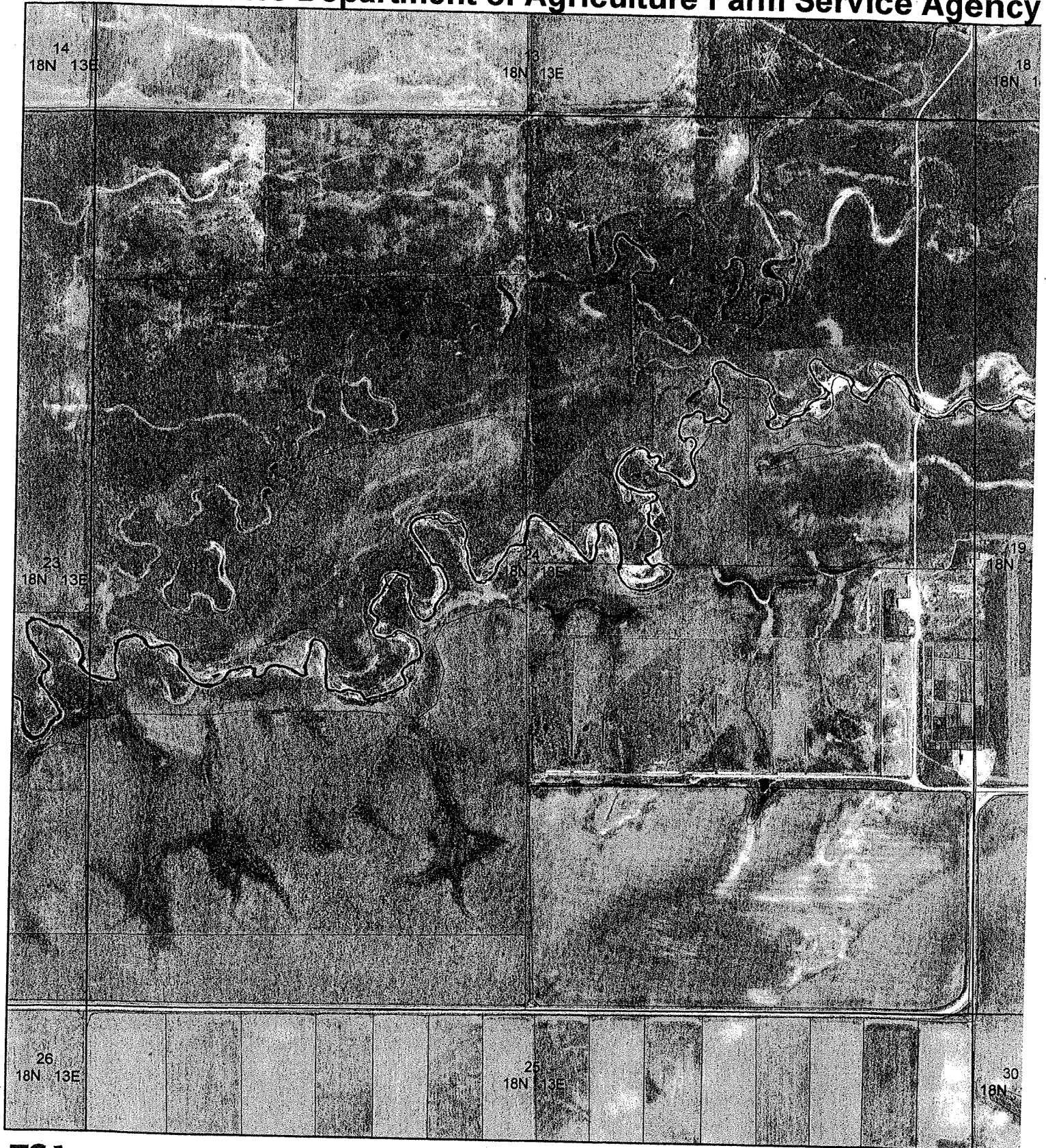
Field: East of Sale Barn Acres:

Irrigated			RESULTS OF DEEP SOIL ANALYSIS										Dryland		
Lab No.	Depth	OM %	NO3-N ppm	NO3-N lbs/ac	Phos. ppm	K ppm	SO4-S ppm	Text	Lime	Soil pH	Salt Haz	Na meq	PAW		
962979	0-6	4.9	8	16	15		5	L	M+	8.1	0.6		0.8		
962980	-12		4	8			5	L	M+				0.3		

Production		N	Soil	Adeq N	Add'l	Phos	Add'l	Phos
Bu/ac	T/ac	Req	Avail N	to Produce	Req	ppm	P205	lbs/ac
	2	110	105	2	5	15	25	
	2.1/2	140	125	21/2	15			

If you have any questions please call
 Ray or Mike
 406-259-5779

Option 1 Fertilizer Suggested					Option 2 Fertilizer Suggested					Option 3 Fertilizer Suggested				
Crop: Alf/GR Yield Goal: 2					Crop: Alf/Grass Yield Goal: 2 1/2					Crop: Yield Goal				
	Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band		Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band		Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band
N	5	25			N	15	30			N				
P2O5	25	25			P2O5	30	30			P2O5				
K2O	0	0			K2O	0	0			K2O				
S	30	30			S	30	30			S				
Zn					Zn					Zn				
Fe					Fe					Fe				
Cu					Cu					Cu				
Mn					Mn					Mn				



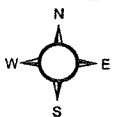
Montana Fergus County

2012

Farm: 4703

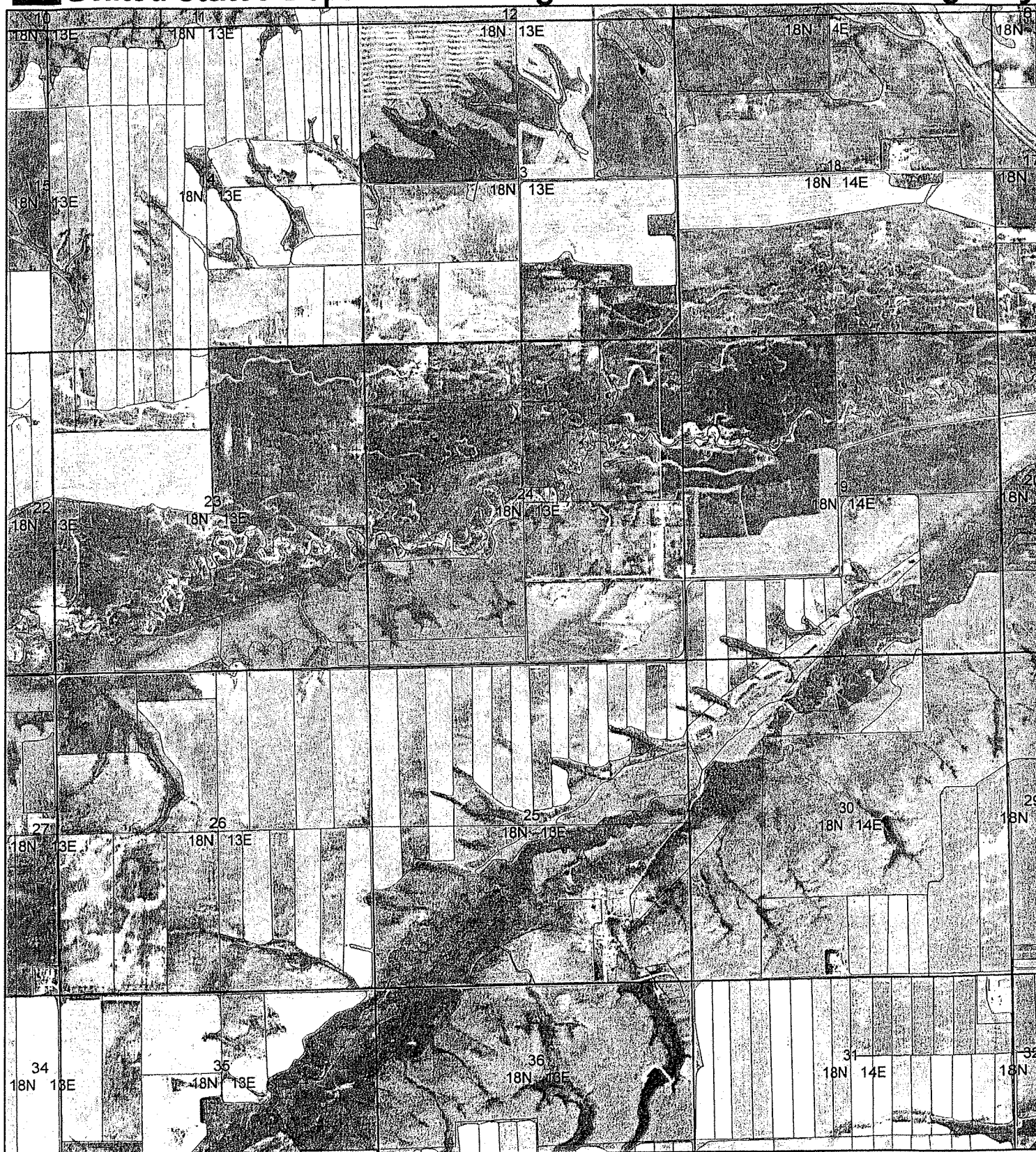
Legend

- Restricted Use
- ▽ Limited Restrictions
- Exempt from Conserv Compliance Provisions
- CLU Field Boundary
- ▨ Rangeland/Forest
- ▧ Non Ag Use



USDA FSA maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or the 2011 ortho rectified imagery for Montana. The producer accepts the data "as is" and assumes all risks associated with its use. The USDA Farm Service Agency assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside of FSA Programs. Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-028 and attached maps)

USDA **United States Department of Agriculture Farm Service Agency**



Montana
Fergus County

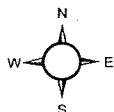
2012

Farm: 4703

Legend

- Restricted Use
- ▽ Limited Restrictions
- Exempt from Conserva Compliance Provisions

- CLU Field Boundary
- Rangeland/Forest
- Non Ag Use



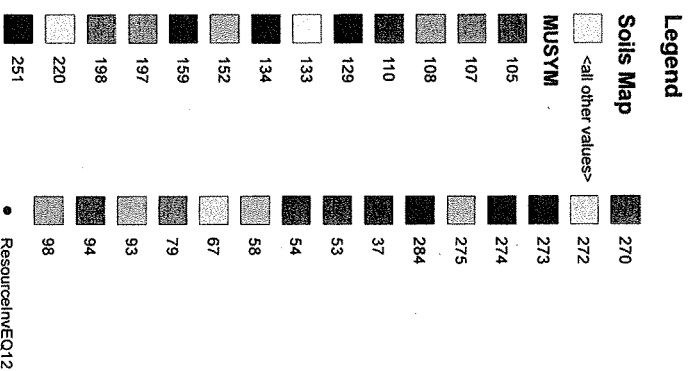
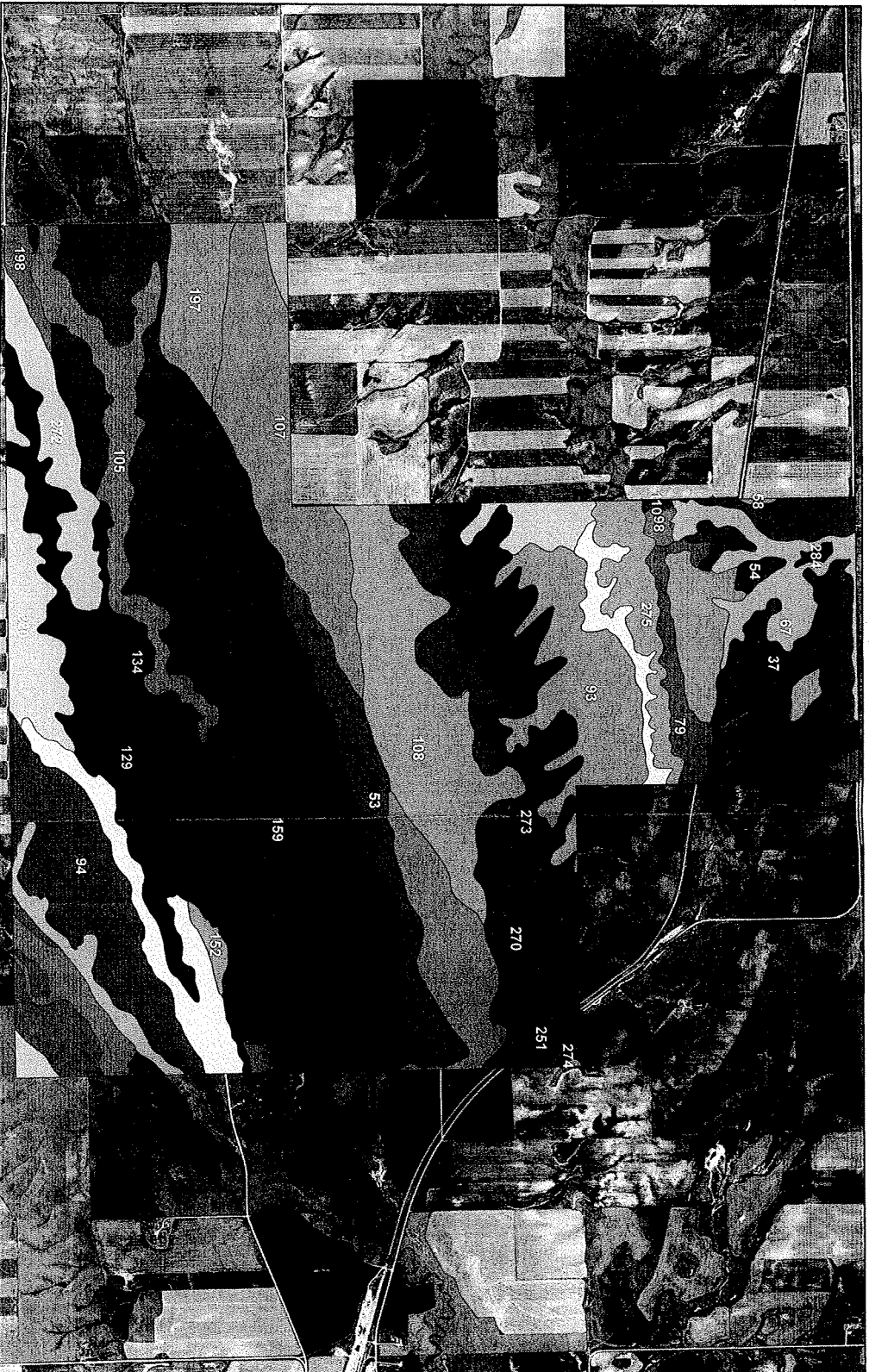
USDA FSA maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or the 2011 ortho rectified imagery for Montana. The producer accepts the data 'as is' and assumes all risks associated with its use. The USDA Farm Service Agency assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside of FSA Programs.

SOIL MAP

District: JUDITH BASIN CONSERVATION DISTRICT

Date: 12/21/2011

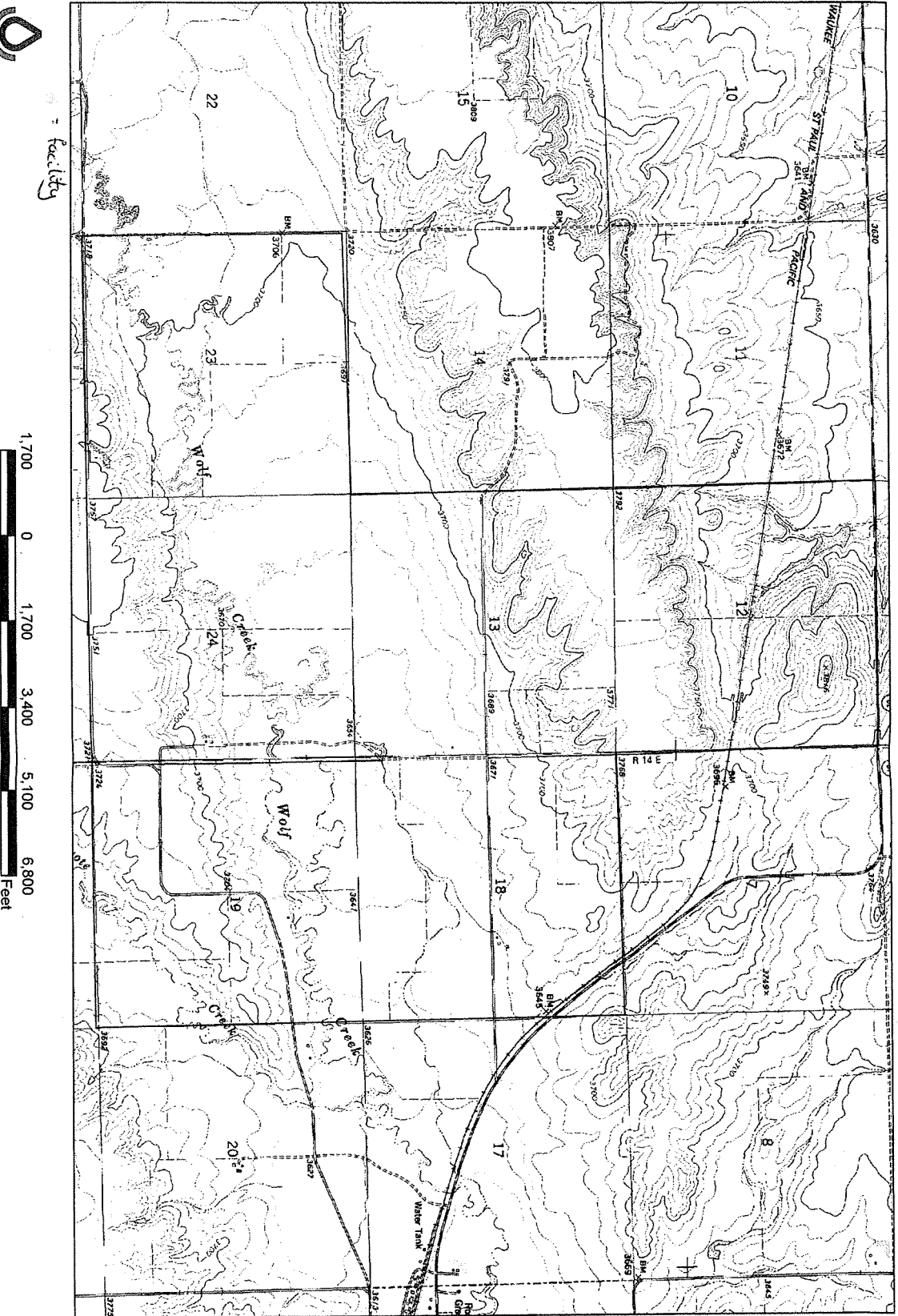
Field Office: STANFORD SERVICE CENTER
Agency: NRCS
Assisted By: PAMELA LINKER
State and County: MT, JUDITH BASIN



Date: 12/21/2011

TOPOGRAPHY MAP

Agency: NRCS
Assisted By: PAMELA LINKER
State and County: MT, JUDITH BASIN



Legend

□ Polygon Layer

• ResourceInvEQ12

p1ss_a_m1045



Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Eltzac and similar soils

Extent: about 25 percent of the unit
Landform(s): hills, plains
Slope gradient: 15 to 45 percent
Parent material: clayey residuum over semiconsolidated shale
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none
Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 7e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: low

Representative soil profile:		Texture	Permeability	Available water capacity	pH	Kw	Kt
A	0 to 4 in	clay	slow	0.6 to 0.7 in	7.4 to 8.4	.20	.20
Bk	4 to 21 in	clay	very slow	2.0 to 2.4 in	6.6 to 8.4	.17	.17
C	21 to 38 in	clay	very slow	2.1 to 2.4 in	6.6 to 8.4	.17	.17
Cr	38 to 60 in	unweathered bedrock	impermeable	0.0 to 0.0 in			

Minor Components

Norbert and similar soils: 5 percent of the unit
Lawther and similar soils: 5 percent of the unit

Dec 21, 2011 1:41 PM

B & C AG CONSULTANTS
P.O. Box 1184, 315 So. 21 Street
Billings MT 59103-1184

Page 2 of 2

Date Recd:

12/21/11

Profile#:

Grove Brad Schmitt

Address: Geyser, MT

Dealer: Lewistown Propane Denton

Field: East of Shelter Belt

Acres:

RESULTS OF DEEP SOIL ANALYSIS												
Irrigated					Dryland							
Lab No.	Depth	OM %	NO3-N ppm	Phos. ppm	K ppm	SO4-S ppm	Text	Line	Soil pH	Salt Haz	Na meq	PAW
962781	0-6	5.4	17	34	12	5	L	M+	8.1	0.5		0.8
962982	-20		3	14		5	L	M+				0.4
TOTAL												
Lab No.	Zinc ppm	Iron ppm	Copper ppm	Mn ppm	Borin ppm	CA ppm	Mg ppm	Previous Crop: Grass				
								Desired Crop: Grass				
								Anticipate Yield				
Lab No.	Base sat	Ca %	Mg %	K %	N %	CEC		Nitrogen Required				
								Subtract avail. N (2R)(100%)				
								Subtract avail. N (4R)(40%)				
Lab No.	meq/100	Ca %	Mg %	K %	Na %			Subtract O.N released				
								Subtract N from manure				
								Subtract N from legume				
								Subtract Others				
Yield Based On Water (+ -) X =												
Add N for straw tie up												
Add N for Protein Goal												
Nitrogen Suggested												
Production Bu/acre	N Req	Soil Avail N	Adapt N to Produce	Adapt N Req	Phos ppm	Adapt P205	Phos lbs/acre	If you have any questions please call				
					12	25		Ray or Mike				
								406-259-5779				
Option 1 Fertilizer Suggested												
Option 2 Fertilizer Suggested												
Option 3 Fertilizer Suggested												
Yield Goal												
Crop: Grass	Suggested Yield Bu/acre	Protein %	Yield Goal	Crop:	Protein %	Yield Goal	Crop:	Protein %	Yield Goal	Crop:	Protein %	Yield Goal
N	10	25		N	60	60	N	60	60	N	60	60
P205	25	25		P205	30	30	P205	30	30	P205	30	30
K2O	30	0		K2O	30	30	K2O	30	30	K2O	30	30
S	30	30		S	30	30	S	30	30	S	30	30
Zn				Zn			Zn			Zn		
Fe				Fe			Fe			Fe		
Cu				Cu			Cu			Cu		
Mn				Mn			Mn			Mn		

DEC 21 2011 1:41 PM

Date Rec'd: 12/21/11
 Date Sent: 12/21/11
 Profile#:

B & C AG CONSULTANTS, LLC
 P.O. Box 1184, 315 So. 2nd Street
 Billings MT 59103-1184

Page 1 of 2

Dealer: Lewistown Propane Denton

Field: East of Sals Barn Acres:

Grove Brad Schmitt
 Address: Geyser, MT

RESULTS OF DEEP SOIL ANALYSIS													
Irrigated						Dryland							
Lab No.	Depth	OM %	NO3-N ppm	NO3-N lbs/ac	Phos. ppm	K ppm	SO4-S ppm	Text	Lime	Soil pH	Salt Haz	Na meq	PAW
962978	0-6	4.9	8	16	15		5	L	M+	8.1	0.6		0.8
962980	-12		4	8			5	L	M+				0.3
TOTAL				24									1.1
Lab No.	Zinc ppm	Iron ppm	Copper ppm	Mn ppm	Borin ppm	CA ppm	Mg ppm	Previous Crop: Hay 50% Alf Desired Crop: Hay 50% Grass					
Lab No.	Base sat %	Cs %	Mg %	K %	Na %	CEC		Anticipate Yield 2T					
Lab No.	meq 100	Cu %	Mg %	K %	Na %			Nitrogen Required Subtract avail. N (28)(100%) Subtract avail. N (48)(40%)					
Lab No.								Subtract O.N released Subtract N from manure Subtract N from legume					
Lab No.								Subtract Others Add N for straw tie up Add N for Protein Goal					
Yield Based On Water (2 + 7 -) X 500 = 4500#													
Nitrogen Suggested													
5 15													
2 2.5													
110 140													
25 25													
40 40													
40 60													
Option I Option II Option III													
Hay Hay													

If you have any questions please call											
Ray or Mike											
406-259-5779											
Production	N Req	Soil Avail N	Adeq N to Produce	Phos Addl P205	Phos ppm	Phos Reg	Adel N	Soil Avail N	Adeq N to Produce	Phos Addl P205	Phos ppm
Bu/ac	2	110	105	2	5	15	25	2	110	105	2
2 1/2	140	125	21/2	15				140	125	21/2	15

Option 1 Fertilizer Suggested						Option 2 Fertilizer Suggested						Option 3 Fertilizer Suggested					
Crop: Alf/Grass Yield Goal: 2						Crop: Alf/Grass Yield Goal: 2 1/2						Crop: Alf/Grass Yield Goal: 2					
Supplied	Present	Required	Deficit	Soil	Yield	Supplied	Present	Required	Deficit	Soil	Yield	Supplied	Present	Required	Deficit	Soil	Yield
Rate	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac	Rate	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac	Rate	lb/ac	lb/ac	lb/ac	lb/ac	lb/ac
N	5	25	20			N	15	30	15			N	15	30	15		
P205	25	25	0			P205	30	30	0			P205	30	30	0		
K2O	0	0	0			K2O	0	0	0			K2O	0	0	0		
S	30	30	0			S	30	30	0			S	30	30	0		
Zn						Zn						Zn					
Fe						Fe						Fe					
Cu						Cu						Cu					
Mn						Mn						Mn					

MAP Reference	Acres	Current Crop	Soil Type
Map # 6		Crested Wheat	#220 TAMANEEN - Judith Clay loam
Field # 9	29.14	Alfalfa	0-2% Slope
Map # 6		Crested Wheat	#220 TAMANEEN - Judith Clay loam
Field # 8	85.97	Alfalfa	0-2% Slope
Map # 10		Crested Wheat	#94 DANVERS Clay - loam
Field # 2	163.55	Alfalfa	2 to 4% Slope
Map # 3		Crested Wheat	#93 FAIRFIELD - Danvers clay loam
Field # 1	72.1	Alfalfa	0-2% Slope
Map # 17		✓	✓
Field # 2	19.96	✓	✓
Map # 17		✓	✓
Field # 3	34.57	✓	✓
Map # 17		✓	#270 Winfred Clay loam
Field # 4	49.82	✓	2 to 8 slope
Map # 5		✓	#93 FAIRFIELD - Danvers clay loam
Field # 1	149.56	✓	0-2% slope

* Additional maps will be sent to supplement.

Soils Inventory Report

~~XXXXXXXXXXXX~~

~~XXXXXXXXXXXX~~

Map Unit Symbol	Acres	Percent
105	175.4	5%
107	310.1	8%
108	298.8	8%
110	3.9	0%
129	93.1	2%
133	127.5	3%
134	42.6	1%
152	10.4	0%
159	984.1	26%
197	75	2%
198	22.8	1%
220	123.8	3%
251	25.4	1%
270	353.3	9%
272	89.9	2%
273	277.7	7%
274	2.4	0%
275	119.4	3%
284	3.7	0%
37	55.2	1%
53	170.9	4%
54	8.4	0%
58	1.4	0%
67	81.3	2%
79	49.5	1%
93	152.7	4%
94	179.3	5%
98	7.6	0%
Total:	3845.6	100%

* Application will only be on field in #220, #93, #94, & #270; additional maps will be sent to supplement once manure sample is returned.

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

53--Daglum-Adger complex, 0 to 2 percent slopes

Mean annual precipitation: 15 to 19 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 110 to 125 days

Daglum and similar soils

Extent: about 60 percent of the unit

Landform(s): alluvial fans, stream terraces

Slope gradient: 0 to 2 percent

Parent material: clayey alluvium

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Draft Silty (Si) RRU 46-C 13-19" p.z.

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 4s

Drainage class: moderately well drained

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

Representative soil profile:			Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 10 in	clay loam		moderate	1.6 to 1.8 in	5.6 to 7.3	.24	.24
Btn --	10 to 17 in	clay		slow	0.9 to 1.0 in	6.1 to 9.0	.24	.24
Bknyz --	17 to 60 in	clay		slow	5.1 to 6.0 in	7.9 to 9.0	.24	.24

Adger and similar soils

Extent: about 30 percent of the unit

Landform(s): alluvial fans, stream terraces

Slope gradient: 0 to 2 percent

Parent material: clayey alluvium

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Dense Clay (DC) RRU 46-C 15-19" p.z.

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 4

Wind erodibility index (WEI): 86

Land capability class, nonirrigated: 6s

Drainage class: moderately well drained

Hydric soil: no

Hydrologic group: D

Potential frost action: low

Representative soil profile:			Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 6 in	clay		slow	0.7 to 0.9 in	6.6 to 9.0	.24	.24
Btn --	6 to 14 in	clay		very slow	0.7 to 0.9 in	7.9 to 9.0	.24	.24
Bknyz --	14 to 60 in	clay		very slow	3.7 to 4.6 in	7.8 to 9.6	.28	.28

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Savage and similar soils: 5 percent of the unit

Nobe and similar soils: 5 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

93--Fairfield-Danvers clay loams, 0 to 2 percent slopes

Mean annual precipitation: 15 to 19 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 110 to 125 days

Fairfield and similar soils

Extent: about 60 percent of the unit

Landform(s): terraces

Slope gradient: 0 to 2 percent

Parent material: loamy alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

Representative soil profile:			Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 6 in		clay loam	moderate	0.8 to 1.1 in	6.6 to 7.8	.24	.24
Bt --	6 to 19 in		silty clay loam	moderately slow	1.7 to 2.2 in	6.6 to 8.4	.43	.43
Bk1 --	19 to 43 in		silty clay loam	moderately slow	3.1 to 4.1 in	7.9 to 8.4	.43	.43
2Bk2 --	43 to 60 in		very gravelly sandy loam	moderately rapid	1.2 to 1.4 in	7.9 to 9.0	.10	.24

Danvers and similar soils

Extent: about 30 percent of the unit

Landform(s): terraces

Slope gradient: 0 to 2 percent

Parent material: clayey alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: C

Potential frost action: low

Representative soil profile:			Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 4 in		clay loam	moderate	0.6 to 0.7 in	6.1 to 7.8	.24	.24
Bt --	4 to 14 in		silty clay	slow	1.3 to 1.6 in	6.6 to 8.4	.32	.32
Bk --	14 to 44 in		clay loam	slow	3.9 to 4.8 in	7.4 to 8.4	.28	.28
2C --	44 to 60 in		gravelly clay loam	moderately slow	0.9 to 1.1 in	7.4 to 8.4	.17	.32

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Judith and similar soils: 10 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

94--Fairfield-Danvers clay loams, 2 to 4 percent slopes

Mean annual precipitation: 15 to 19 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 110 to 125 days

Fairfield and similar soils

Extent: about 45 percent of the unit

Landform(s): terraces

Slope gradient: 2 to 4 percent

Parent material: loamy alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

Representative soil profile:	Texture	Permeability	Available water capacity	pH	Kw	Kf
A -- 0 to 6 in	clay loam	moderate	0.8 to 1.1 in	6.6 to 7.8	.24	.24
Bt -- 6 to 19 in	silty clay loam	moderately slow	1.7 to 2.2 in	6.6 to 8.4	.43	.43
Bk1 -- 19 to 43 in	silty clay loam	moderately slow	3.1 to 4.1 in	7.9 to 8.4	.43	.43
2Bk2 -- 43 to 60 in	very gravelly sandy loam	moderately rapid	1.2 to 1.4 in	7.9 to 9.0	.10	.24

Danvers and similar soils

Extent: about 40 percent of the unit

Landform(s): terraces

Slope gradient: 2 to 4 percent

Parent material: clayey alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: C

Potential frost action: low

Representative soil profile:	Texture	Permeability	Available water capacity	pH	Kw	Kf
A -- 0 to 4 in	clay loam	moderate	0.6 to 0.7 in	6.1 to 7.8	.24	.24
Bt -- 4 to 14 in	silty clay	slow	1.3 to 1.6 in	6.6 to 8.4	.32	.32
Bk -- 14 to 44 in	clay loam	slow	3.9 to 4.8 in	7.4 to 8.4	.28	.28
2C -- 44 to 60 in	gravelly clay loam	moderately slow	0.9 to 1.1 in	7.4 to 8.4	.17	.32

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Judell and similar soils: 8 percent of the unit

Judith and similar soils: 7 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

105--Fluvaquentic Haplaquolls, nearly level

Mean annual precipitation: 15 to 19 inches

Mean annual temperature:

Frost-free period: 110 to 125 days

Fluvaquentic haplaquolls and similar soils

Extent: about 90 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 2 percent

Parent material:

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): ---

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Land capability class, nonirrigated:

Drainage class:

Hydric soil: yes

Hydrologic group:

Potential frost action:

Representative soil profile:

none

Texture

Permeability

*Available water
capacity*

pH

Kw

Kf

Minor Components

Well-drained soils: 10 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

107--Gerber clay loam, 0 to 2 percent slopes

Mean annual precipitation: 15 to 19 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 110 to 125 days

Gerber and similar soils

Extent: about 90 percent of the unit

Landform(s): alluvial fans, stream terraces

Slope gradient: 0 to 2 percent

Parent material: clayey alluvium derived from shale

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: C

Potential frost action: low

Representative soil profile:

		Texture	Permeability	Available water capacity	pH	Kw	Kf
A	--	0 to 5 in	clay loam	moderately slow	0.7 to 0.9 in	6.6 to 7.8	.24
Bt	--	5 to 20 in	silty clay	slow	2.1 to 2.7 in	7.4 to 8.4	.24
Bk	--	20 to 60 in	silty clay	slow	5.6 to 7.2 in	7.4 to 8.4	.32

Minor Components

Gerber and similar soils: 10 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

108--Gerber clay loam, 2 to 4 percent slopes

Mean annual precipitation: 15 to 19 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 110 to 125 days

Gerber and similar soils

Extent: about 85 percent of the unit

Landform(s): alluvial fans, stream terraces

Slope gradient: 2 to 4 percent

Parent material: clayey alluvium derived from shale

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: C

Potential frost action: low

Representative soil profile:	Texture	Permeability	Available water capacity	pH	Kw	Kf
A -- 0 to 5 in	clay loam	moderately slow	0.7 to 0.9 in	6.6 to 7.8	.24	.24
Bt -- 5 to 20 in	silty clay	slow	2.1 to 2.7 in	7.4 to 8.4	.24	.24
Bk -- 20 to 60 in	silty clay	slow	5.6 to 7.2 in	7.4 to 8.4	.32	.32

Gerber and similar soils

Extent: about 15 percent of the unit

Landform(s): alluvial fans, stream terraces

Slope gradient: 0 to 4 percent

Parent material: clayey alluvium derived from shale

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 4

Wind erodibility index (WEI): 86

Land capability class, nonirrigated: 4e

Drainage class: well drained

Hydric soil: no

Hydrologic group: C

Potential frost action: low

Representative soil profile:	Texture	Permeability	Available water capacity	pH	Kw	Kf
A -- 0 to 5 in	silty clay	slow	0.7 to 0.9 in	6.6 to 7.8	.28	.28
Bt -- 5 to 20 in	silty clay	slow	2.1 to 2.7 in	7.4 to 8.4	.24	.24
Bk -- 20 to 60 in	silty clay	slow	5.6 to 7.2 in	7.4 to 8.4	.32	.32

Minor Components

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

133--Judith-Windham gravelly clay loams, 2 to 8 percent slopes

Mean annual precipitation: 15 to 20 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 90 to 125 days

Judith and similar soils

Extent: about 50 percent of the unit

Landform(s): alluvial fans, terraces

Slope gradient: 2 to 8 percent

Parent material: alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

Representative soil profile:		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 6 in	gravelly clay loam	moderate	0.7 to 0.8 in	7.4 to 8.4	.10	.20
Bk1 --	6 to 24 in	gravelly clay loam	moderate	2.2 to 2.5 in	7.9 to 8.4	.15	.32
2Bk2 --	24 to 66 in	extremely gravelly sandy clay loam	moderately rapid	2.5 to 3.4 in	7.9 to 8.4	.05	.24

Windham and similar soils

Extent: about 40 percent of the unit

Landform(s): alluvial fans, terraces

Slope gradient: 2 to 8 percent

Parent material: alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Silty-Limy (SiLy) 15-19" p.z.

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Land capability class, nonirrigated: 6s

Drainage class: well drained

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

Representative soil profile:		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 6 in	gravelly clay loam	moderate	0.7 to 0.8 in	7.4 to 8.4	.10	.20
Bk1 --	6 to 12 in	gravelly clay loam	moderate	0.5 to 0.7 in	7.9 to 8.4	.15	.28
Bk2 --	12 to 18 in	extremely gravelly loam	moderate	0.2 to 0.3 in	7.9 to 8.4	.05	.32
Bk3 --	18 to 60 in	extremely gravelly loam	moderate	1.3 to 1.7 in	7.9 to 8.4	.05	.32

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Judith and similar soils: 5 percent of the unit

Windham and similar soils: 5 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

159--Marcott silty clay loam

Mean annual precipitation: 15 to 20 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 90 to 125 days

Marcott and similar soils

Extent: about 90 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 2 percent

Parent material: clayey alluvium

Restrictive feature(s): none

Seasonal high water table: approximately 30 inches

Flooding hazard: rare

Ponding hazard: none

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 4L

Wind erodibility index (WEI): 86

Land capability class, nonirrigated: 4w

Drainage class: somewhat poorly drained

Hydric soil: no

Hydrologic group: D

Potential frost action: high

Ecological site(s): Draft Subirrigated (Sb) RRU 46-C 13-19" p.z.

Representative soil profile:			Texture	Permeability	Available water capacity	pH	Kw	Kf
A	--	0 to 8 in	silty clay loam	moderately slow	1.1 to 1.3 in	6.6 to 8.4	.32	.32
Bw	--	8 to 25 in	silty clay	slow	2.3 to 2.8 in	7.4 to 8.4	.32	.32
Bk	--	25 to 42 in	silty clay	slow	2.2 to 2.7 in	7.4 to 8.4	.32	.32
2Cg	--	42 to 66 in	extremely gravelly sandy clay loam	moderately rapid	1.7 to 1.9 in	7.4 to 8.4	.02	.24

Minor Components

Marcott and similar soils: 5 percent of the unit

Sudworth and similar soils: 5 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

220--Tamaneen-Judith clay loams, 0 to 2 percent slopes

Mean annual precipitation: 15 to 19 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 90 to 125 days

Tamaneen and similar soils

Extent: about 60 percent of the unit

Landform(s): alluvial fans, stream terraces

Slope gradient: 0 to 2 percent

Parent material: alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Representative soil profile:		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 7 in	clay loam	moderate	1.1 to 1.2 in	6.6 to 7.8	.24	.24
Bt --	7 to 13 in	silty clay	moderately slow	0.8 to 0.9 in	6.6 to 7.8	.28	.28
Bk1 --	13 to 17 in	clay loam	moderately slow	0.6 to 0.6 in	7.4 to 8.4	.24	.24
Bk2 --	17 to 22 in	very gravelly loam	moderate	0.5 to 0.6 in	7.9 to 8.4	.15	.32
2C --	22 to 66 in	extremely gravelly sandy loam	moderately rapid	1.8 to 2.2 in	7.9 to 8.4	.05	.20

Judith and similar soils

Extent: about 30 percent of the unit

Landform(s): alluvial fans, terraces

Slope gradient: 0 to 2 percent

Parent material: alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Representative soil profile:		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 6 in	clay loam	moderate	0.9 to 1.2 in	7.4 to 8.4	.20	.20
Bk1 --	6 to 24 in	clay loam	moderate	2.2 to 2.5 in	7.9 to 8.4	.32	.32
2Bk2 --	24 to 66 in	extremely gravelly sandy clay loam	moderately rapid	2.5 to 3.4 in	7.9 to 8.4	.05	.24

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Windham and similar soils: 10 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

270--Winifred clay loam, 2 to 8 percent slopes

Mean annual precipitation: 15 to 19 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 110 to 125 days

Winifred and similar soils

Extent: about 90 percent of the unit

Landform(s): plains

Slope gradient: 2 to 8 percent

Parent material: alluvium and/or residuum over
semiconsolidated shale

Restrictive feature(s): paralithic bedrock at 20 to 40 inches

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 3e

Drainage class: well drained

Hydric soil: no

Hydrologic group: D

Potential frost action: low

Representative soil profile:			Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 3 in	clay loam		moderately slow	0.4 to 0.6 in	6.6 to 7.8	.28	.28
Bw --	3 to 14 in	silty clay		slow	1.4 to 1.9 in	7.4 to 8.4	.32	.32
Bk --	14 to 32 in	clay		slow	2.3 to 3.0 in	7.4 to 8.4	.28	.28
Cr --	32 to 60 in	unweathered bedrock		impermeable	0.0 to 0.0 in			

Minor Components

Judith and similar soils: 5 percent of the unit

Linwell and similar soils: 5 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

273--Winifred-Judith clay loams, 8 to 15 percent slopes

Mean annual precipitation: 15 to 19 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 90 to 125 days

Winifred and similar soils

Extent: about 50 percent of the unit

Landform(s): hills, plains

Slope gradient: 8 to 15 percent

Parent material: alluvium and/or residuum over semiconsolidated shale

Restrictive feature(s): paralithic bedrock at 20 to 40 inches

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 4e

Drainage class: well drained

Hydric soil: no

Hydrologic group: D

Potential frost action: low

Representative soil profile:		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 3 in	clay loam	moderately slow	0.4 to 0.6 in	6.6 to 7.8	.28	.28
Bw --	3 to 14 in	silty clay	slow	1.4 to 1.9 in	7.4 to 8.4	.32	.32
Bk --	14 to 32 in	clay	slow	2.3 to 3.0 in	7.4 to 8.4	.28	.28
Cr --	32 to 60 in	unweathered bedrock	impermeable	0.0 to 0.0 in			

Judith and similar soils

Extent: about 25 percent of the unit

Landform(s): alluvial fans, terraces

Slope gradient: 8 to 15 percent

Parent material: alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 4e

Drainage class: well drained

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

Representative soil profile:		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 6 in	clay loam	moderate	0.9 to 1.2 in	7.4 to 8.4	.20	.20
Bk1 --	6 to 24 in	clay loam	moderate	2.2 to 2.5 in	7.9 to 8.4	.32	.32
2Bk2 --	24 to 66 in	extremely gravelly sandy clay loam	moderately rapid	2.5 to 3.4 in	7.9 to 8.4	.05	.24

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Judith and similar soils: 9 percent of the unit

Windham and similar soils: 8 percent of the unit

Linwell and similar soils: 8 percent of the unit

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

275--Winifred-Windham-Eltsac complex, 15 to 45 percent slopes

Mean annual precipitation: 15 to 19 inches

Mean annual temperature: 39 to 45 degrees F

Frost-free period: 110 to 125 days

Winifred and similar soils

Extent: about 40 percent of the unit

Landform(s): hills, plains

Slope gradient: 15 to 45 percent

Parent material: alluvium and/or residuum over semiconsolidated shale

Restrictive feature(s): paralithic bedrock at 20 to 40 inches

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 7e

Drainage class: well drained

Hydric soil: no

Hydrologic group: D

Potential frost action: low

Representative soil profile:	Texture	Permeability	Available water capacity	pH	Kw	Kf
A -- 0 to 3 in	clay loam	moderately slow	0.4 to 0.6 in	6.6 to 7.8	.28	.28
Bw -- 3 to 14 in	silty clay	slow	1.4 to 1.9 in	7.4 to 8.4	.32	.32
Bk -- 14 to 32 in	clay	slow	2.3 to 3.0 in	7.4 to 8.4	.28	.28
Cr -- 32 to 60 in	unweathered bedrock	impermeable	0.0 to 0.0 in			

Windham and similar soils

Extent: about 25 percent of the unit

Landform(s): terraces

Slope gradient: 15 to 45 percent

Parent material: alluvium derived from limestone

Restrictive feature(s): none

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Silty-Limy (SiLy) 15-19" p.z.

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Land capability class, nonirrigated: 7e

Drainage class: well drained

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

Representative soil profile:	Texture	Permeability	Available water capacity	pH	Kw	Kf
A -- 0 to 6 in	very gravelly loam	moderate	0.7 to 0.8 in	7.4 to 8.4	.10	.28
Bk1 -- 6 to 12 in	gravelly clay loam	moderate	0.5 to 0.7 in	7.9 to 8.4	.17	.32
Bk2 -- 12 to 18 in	extremely gravelly loam	moderate	0.2 to 0.3 in	7.9 to 8.4	.05	.32
Bk3 -- 18 to 60 in	extremely gravelly loam	moderate	1.3 to 1.7 in	7.9 to 8.4	.05	.32

Map Unit Descriptions (MT)

Fergus County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Eltzac and similar soils

Extent: about 25 percent of the unit

Landform(s): hills, plains

Slope gradient: 15 to 45 percent

Parent material: clayey residuum over semiconsolidated shale

Restrictive feature(s): paralithic bedrock at 20 to 40 inches

Seasonal high water table: greater than 60 inches

Flooding hazard: none

Ponding hazard: none

Ecological site(s): Clayey (Cy) RRU 46-C 10-14" p.z.

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 4

Wind erodibility index (WEI): 86

Land capability class, nonirrigated: 7e

Drainage class: well drained

Hydric soil: no

Hydrologic group: D

Potential frost action: low

Representative soil profile:

	Texture	Permeability	Available water capacity	pH	Kw	Kf
A -- 0 to 4 in	clay	slow	0.6 to 0.7 in	7.4 to 8.4	.20	.20
Bk -- 4 to 21 in	clay	very slow	2.0 to 2.4 in	6.6 to 8.4	.17	.17
C -- 21 to 38 in	clay	very slow	2.1 to 2.4 in	6.6 to 8.4	.17	.17
Cr -- 38 to 60 in	unweathered bedrock	impermeable	0.0 to 0.0 in			

Minor Components

Norbert and similar soils: 5 percent of the unit

Lawther and similar soils: 5 percent of the unit

Dec. 21, 2011- 1:41PM

Date Rec'd:

Date Sent: 12/21/11

Profile#:

Grower Brad Schmitt

Address: Geyser, MT

B & C AG CONSULTANTS

P.O. Box 1184, 315 So. 21 Street

Billings MT 59103-1184 Page 2 of 2

Dealer Lewistown Propane Denton

Field: East of Shelter Belt

Acres:

RESULTS OF DEEP SOIL ANALYSIS												Dryland			
Lab No.	Depth	OM %	NO3-N ppm	NO3-N lbs/ac	Phos. ppm	K ppm	SO4-S ppm	Text	Lime	Soil pH	Salt Haz	Na meq	PAW		
962781	0-6	5.4	17	34	12		5	L	M+	8.1	0.6		0.8		
962982	-20		3	14			5	L	M+				0.4		
TOTAL				48									1.2		
Lab No.	Zinc ppm	Iron ppm	Copper ppm	Mn ppm	Borin ppm	CA ppm	Mg ppm	Previous Crop: Grass					Option I	Option II	Option III
								Desired Crop: Grass							
								Anticipate Yield					2	3	
Lab No.	Base sat	Ca %	Mg %	K %	Na %	CEC		Nitrogen Required					100	150	
								Subtract avail. N (2R)(100%)					50	50	
								Subtract avail. N (4R)(40%)							
Lab No.	meq 100	Ca %	Mg %	K %	Na %			Subtract O.N released					40	40	
								Subtract N from manure							
								Subtract N from legume							
								Subtract Others							
Yield Based On Water (+ -) X =								Add N for straw tie up							
								Add N for Protein Goal							
								Nitrogen Suggested					10	60	

Production	N	Soil	Adeq N to	Add'l	Phos	Add'l	Phos
Bu/ac	T/ac	Req	Avail N	Req	ppm	P2O5	lbs/ac
					12	25	

If you have any questions please call

Ray or Mike
406-259-5779

Option 1 Fertilizer Suggested					Option 2 Fertilizer Suggested					Option 3 Fertilizer Suggested				
Crop: Grass Yield Goal					Crop: Yield Goal					Crop: Yield Goal				
	Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band		Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band		Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band
N	10	25			N	60	60			N				
P2O5	25	25			P2O5	30	30			P2O5				
K2O	30	0			K2O	30	30			K2O				
S	30	30			S	30	30			S				
Zn					Zn					Zn				
Fe					Fe					Fe				
Cu					Cu					Cu				
Mn					Mn					Mn				

Option 1 Fertilizer Suggested					Option 2 Fertilizer Suggested					Option 3 Fertilizer Suggested				
Crop: Alf/GR		Yield Goal: 2			Crop: Alf/Grass		Yield Goal: 2 1/2			Crop		Yield Goal		
	Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band		Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band		Suggested lbs/ac	Preplant Topdress	Sidedress Fertigate	Drilled Band
N	5	25			N	15	30			N				
P2O5	25	25			P2O5	30	30			P2O5				
K2O	0	0			K2O	0	0			K2O				
S	30	30			S	30	30			S				
Zn					Zn					Zn				
Fe					Fe					Fe				
Cu					Cu					Cu				
Mn					Mn					Mn				

MAP Reference	Acres	Current Crop	Soil Type
MAP # 6		Crested Wheat	#220 Tamarine - Judith Clay loam
Field # 9	29.14	Alfalfa	0-2% Slope
MAP # 6		Crested Wheat	#220 Tamarine - Judith Clay loam
Field # 8	85.97	Alfalfa	0-2% Slope
MAP # 10		Crested Wheat	#94 Danvers Clay - loam
Field # 2	163.55	Alfalfa	2 to 4% Slope
MAP # 3		Crested Wheat	#93 Fairfield - Danvers Clay loam
Field # 1	72.1	Alfalfa	0-2% Slope
MAP # 17			
Field # 2	19.96	✓	✓
MAP # 17			
Field # 3	34.57	✓	✓
MAP # 17			
Field # 4	49.82	✓	#270 Pinfield Clay loam
MAP # 5			2 to 8% Slope
Field # 1	149.56	✓	#93 Fairfield - Danvers Clay loam
			0-2% Slope

* Additional maps will be sent to supplement.